

*Scientia est Virtus*



# *United States Air Force Test Pilot School*



## *Graduate Course Catalog and Student Handbook, 2007-08*



USAF TPS PAM 36-7, 22 June 2007



## USAF Test Pilot School

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Edwards AFB, CA 93524

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The material presented in this catalog is subject to change by the Test Pilot School at any time.  
Faculty is listed as of 22 June 2007.

Course descriptions are effective as of 22 June 2007.

# Welcome Letter from the Commandant



**DEPARTMENT OF THE AIR FORCE**  
HEADQUARTERS 412TH TEST WING (AFMC)  
EDWARDS AIR FORCE BASE, CALIFORNIA

MEMORANDUM FOR MEMBERS OF CLASS 07B

FROM: USAF TPS/CC  
220 S Wolfe Ave  
Edwards AFB CA 93524-6485

SUBJECT: Welcome to the United States Air Force Test Pilot School (TPS)

1. On behalf of the men and women of the USAF TPS, welcome to Edwards AFB. Enclosed you will find a complete sponsor package that will give you valuable information to assist you in your transition to Edwards AFB. Along with this information, we've highlighted below a few areas that, in all the preparations for your move, might get overlooked. If you have any questions, please call our Office of Student Services and speak with Della Perry at DSN 527-9933/COMM (661) 277-9933.

**TRAINING/PHYSICALS:** Once you arrive, you will have very little time to take care of any of your mandatory training/physicals. If you have not yet completed any mandatory training such as the AF Physical Fitness Assessment, altitude chamber, or updated your flight physicals, it is imperative that you do so as soon as possible prior to your arrival. In the case of any flight physical results, please fax these to DSN 527-7602/COM (661) 277-7602 as soon as possible.

**SECURITY CLEARANCE:** All pilots and navigators must have a current **TOP SECRET** clearance that will remain current through graduation, or an open investigation prior to their arrival. All others must have a **SECRET** clearance with an open investigation within the past 4 years prior to your arrival. If you have any questions please contact Lt Benhur Pacer via email with SSAN and question [Benhur.pacer@edwards.af.mil](mailto:Benhur.pacer@edwards.af.mil).

**LEAVE:** The course you are about to enter is very demanding and time intensive. As a result, you will have very little opportunity for normal leave. During the year, there is a window of opportunity for leave during the semi-annual school break which is 2 weeks in duration. For your class, this will occur in December 2007. Otherwise, plan on taking your leave after graduation the second week in June. Leave other than this, will be approved on a case-by-case basis.

**HOUSING:** Once you arrive, you will be required to live on base, due to safety of flight reasons. Depending on your family situation, you will either live in base housing, or Desert Villa (single or unaccompanied). To get your name on the housing list prior to your arrival, please contact your local housing office and contact Imelda Bantilan at Edwards Family Housing, DSN 527-4506/COMM (661) 277-4506. Edwards is currently experiencing a period of transition in our housing. To keep our homes up to standards, many are in the process of being renovated. While new homes are being built and others remodeled, it has caused some less than perfect conditions for our personnel. Housing is working diligently with us to ensure you have a home that is safe and acceptable for your year at TPS and that the transition is as painless for you

and your family as possible. Please be patient in this transition period and come directly to us with any problems/issues you experience and we will do our best to resolve them in a manner acceptable to all.

**FAMILY DATA:** Sometimes, the most difficult part of a move can be the impact it has on the family. With this in mind, let us know your family situation so we can try and match you up with another family from your senior class to assist you or answer any questions you might have. Unlike most AF installations, Edwards AFB does NOT have a hospital, but a clinic. This means that many of our needs are met by doctors in the local community. This requires referral from your medical care provider at the clinic and working with TRIWEST/TRICARE/ to make your appointments in town. **Thus, if you have any special needs within your family, please let us know so we can research the base's ability to meet those needs, whether it is educational, medical, or language barrier problems.**

**ARRIVAL DATE:** Class begins 2 July 2007 with several days of Ancillary training and followed with New Class Orientation for you and your spouse on Mon, 9 July 2007. It is our intent to allow ample opportunity to secure housing, schedule household goods delivery, enroll children in school or day care (if needed), familiarize yourself with the base and surrounding communities, and most importantly, ease the stress associated with your move and change in duty assignments. If your orders are cut for a date after 18 June or you desire to delay your arrival past that date, please call the Office of Student Services to work these details. We will inform AFPC of the correct date.

2. One of the most common statements we hear about Edwards is that it is in the middle of nowhere. We like to think it is in the middle of everywhere: Los Angeles is only 80 miles to the southwest; Las Vegas is 210 miles to the northeast; and snow skiing and beaches can be reached within a 2-hour drive. The local job market for your spouse is somewhat limited; however, on base we do have various potential sources of employment. The off-base job market is fair, but the drive is lengthy.

3. We hope this information eases your transition to Edwards. Again, if there is anything my staff or I can do to help, please call and let us know. If you have e-mail capability, you can address your questions to the [TPS.registrar@edwards.af.mil](mailto:TPS.registrar@edwards.af.mil).

  
ANDRE A. GERNER, Colonel, USAF  
Commandant, USAF Test Pilot School

Attachment:  
Sponsor Package

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# USAF Test Pilot School – 2007-08 Graduate Calendar

Class 07A Jan 07 – Dec 07	Class 07B Jul 07 – Jun 08	Class 08A Jan 08 – Dec 08
1 Jan 07 New Year's Day	2 Jul 07 Class Begins	1 Jan 08 New Year's Day
2 Jan 07 Back-in-the-Saddle Day	4 Jul 07 Independence Day	2 Jan 08 Back-in-the-Saddle Day
15 Jan 07 Martin Luther King Day	Aug 07 Performance Phase Begins	21 Jan 08 Martin Luther King Day
Feb 07 Performance Phase Begins	30 Aug – 1 Sep 07 Family Day/Labor Day	Feb 08 Performance Phase Begins
16-19 Feb 07 Family Day/Presidents' Day	13 Oct 07 Columbus Day	15-18 Feb 08 Family Day/Presidents' Day
Mar 07 Flying Qualities Phase Begins	Nov 07 Flying Qualities Phase Begins	Mar 08 Flying Qualities Phase Begins
25-28 May 07 Family Day/Memorial Day	11 Nov 07 Veterans Day	24-26 May 08 Family Day/Memorial Day
Jun 07 Test Management Project Begins	27-30 Nov 07 Thanksgiving Day/Family Day	Jun 08 Test Management Project Begins
Jun 07 Qualitative Evaluations Begin	Dec 07 Curriculum Break	Jun 08 Qualitative Evaluations Begin
Jul 07 Curriculum Break	1 Jan 08 New Year's Day	Jul 08 Curriculum Break
Jul 07 Systems Phase Begins	2 Jan 08 Back-in-the-Saddle Day	Jul 08 Systems Phase Begins
4 Jul 07 Independence Day	Jan 08 Test Management Project Begins	4 Jul 08 Independence Day
31 Aug – 3 Sep 07 Family Day/Labor Day	Jan 08 Systems Phase Begins	30 Aug – 1 Sep 08 Family Day/Labor Day
26-30 Nov 07 Field Trip	Jan 08 Qualitative Evaluations Begin	Oct 08 Field Trip
Oct 07 Comprehensive Written/Oral Exams	21 Jan 08 Martin Luther King Day	Oct 08 Comprehensive Written/Oral Exams
8 Oct 07 Columbus Day	15-18 Feb 08 Family Day/Presidents' Day	13 Oct 08 Columbus Day
12 Nov 07 Veterans Day	Apr 08 Field Trip	11 Nov 08 Veterans Day
22-23 Nov 07 Thanksgiving Day/Family Day	Apr 08 Comprehensive Written/Oral Exams	27-30 Nov 08 Thanksgiving Day/Family Day
Dec 07 Graduation	24-26 May 08 Family Day/Memorial Day	Dec 08 Graduation
	Jun 08 Graduation	

## USAF Vision and Mission Statements

### USAF Vision:

*USAF goals to be met:*

*Foster Mutual Respect and Integrity,*

*Joint and Battle Ready Trained Airmen*

*Open, Transparent Business Practices, Clean Audit*

*Sustain Air Space and Cyberspace Capability*

*Continue to improve the Total Force Quality of Life*

*Provide Persistent Situation Awareness*

*Foster Lean Processes across the Total Air Force*

USAF Mission: *Deliver sovereign options for the defense of the United States of America and its global interests -- to fly and fight in Air, Space, and Cyberspace.*



## USAF TPS Vision and Mission Statements

USAF TPS Vision: *World's premiere educational & training center of excellence for theoretical and applied flight test engineering*

USAF TPS Mission: *Produce highly-adaptive critical-thinking flight test professionals to lead & conduct full-spectrum test & evaluation of aerospace weapon systems*

## **About USAF TPS**

### **History and famous flights/graduates**

The fundamental key to success in aerospace flight test and evaluation is the individual member of the flight test team: the flight test pilot, of course, but nowadays the trained flight test engineer (FTE) and navigator as well. Without him - and increasingly, her - the fundamental work of the Air Force Flight Test Center at Edwards Air Force Base would literally be impossible.

Bravery and flying skills of the highest order have always been requirements for the flight test mission, but much more is demanded of today's flight test professionals: scientific and engineering knowledge, critical and reasoned judgment, and managerial skills of the first order. A well-devised flight test program, skillfully carried out, calls forth the absolute performance of the aircraft and its associated systems. Finding the people who are capable of planning and flying such a program is not easy, nor is the process automatic.

Established in 1944 at Wright Field the Test Pilot School has always be known for producing high quality flight testers and engineers. In 1951 the School was moved to Edwards Air Force Base. In 1961 the Aerospace Research Course was added and the school was renamed the USAF ARPS. In 1972 the ARP course was terminated and the systems phase was added. This is when the school officially became the USAF Test Pilot School or TPS. Due to the sophistication of aircraft as turbojets became more prevalent in the Air Force, the FTE program was initiated in 1973 and the Flight Test Navigator (FTN) program was initiated in 1973. This created three curricula for TPS students, Flight Test Pilot, FTN, or FTE. In 1990 a Test Management Project (TMP) was added in order to facilitate the understanding of the full flight test process. In this TMP, TPS students work in groups to create a test package, execute the test, and present the results to the TPS faculty. Short Courses were added to the curriculum of TPS in 2000. These range in subject from Unmanned Aerial Vehicles to Test Management Planning and normally have a time range of weeks instead of a year.

There are a total of 2,468 graduates of the Test Pilot School. When looking at the graduates there are 109+ General Officers. 62 of the current 272 NASA Astronauts are graduates of TPS. There have been 75 civilian graduates and 38 female graduates including Astronaut Eileen Collins. There have also been 310 international graduates from 24 different countries around the world.

### **Location**

The United State Air Force Test Pilot School is located at Building 1220, Edwards Air Force Base in Southern California. The address and contact information is as follows:

USAF TPS  
220 South Wolfe Avenue  
Edwards Air Force Base, CA  
Contact Phone: 1-(661) 277-3000 or DSN 527-3000  
Contact Email: [TPS.registrar@edwards.af.mil](mailto:TPS.registrar@edwards.af.mil)  
Web Site: <http://www.edwards.af.mil/library/factsheets/factsheet.asp?id=6467>

## Facilities

The Test Pilot School has many resources from which to draw from for teaching the future test pilots and engineers of the Air Force. The School has two fully functional Control Rooms allowing for instruction during school test missions. There is also a RADAR Lab (Room 159) and Electro-Optics Lab (Room 157) located in the TPS Complex for teaching students Lab Test Techniques (LTTs). Aircraft of all different types from the MiG-15 to the B-2 are brought to TPS to allow students hands on experience for possible test flight missions. There are 100 airborne laboratories over the course of the academic year. TPS also is home to the Variable-Stability In-Flight Simulator Test Aircraft or VISTA. This is a Block 30 F-16D with variable flight control systems. VISTA allows for simulation of an aircraft “model” in real flight environment. A student library is located in the 2<sup>nd</sup> floor classroom of TPS. This library provides resources for students working on their different test projects.

There are many other facilities on base which are built into the curriculum. Students experience a different type of control room environment and simulator experience at the Integrated Facility for Avionics Systems Test (I-FAST). At this facility students can fly full practice missions with out risk to test planes or equipment and still have feed back from an active control room.

The Benefield Anechoic Facility (BAF) is located at the southwest side of the Edwards Air Force Base main base. The BAF supports installed systems testing for avionics test programs requiring a large, shielded chamber with radio frequency (RF) absorption capability that simulates free space. The largest platforms tested at the BAF have been the B-52 and C-17 aircraft. The BAF supports testing of other types of systems such as spacecraft, tanks, satellites, air defense systems, drones and armored vehicles.

The Edward’s Technical Library located in Bldg. 1400 is also available for students’ studying needs. Their hours are:

Monday – Friday 0800-1900

Saturday and Sunday 1000-1800



## Facility Safety and Emergency Operations

The term 'Emergency Management' is defined as those plans, actions and programs designed to ensure base survivability and minimize injury to service members and dependents due to man-made or natural disasters.

By far the most likely threat Edwards AFB is faced with is that of an earthquake. The Antelope Valley can be subject to earthquakes throughout the year, and therefore it is essential to be prepared for an earthquake in the event one should occur near Edwards AFB. Be sure to know where the safest areas are located in each room. In general, the safest place to be during an earthquake is outside and away from any buildings, power lines or anything else that could potentially fall on top of you. However, it is far more likely that you will be inside during an earthquake. **DO NOT ATTEMPT TO EXIT THE BUILDING!** Making a mad rush to the nearest exit is far more likely to result in an injury. Instead, immediately seek cover under something sturdy such as a desk or table. Avoid unsecured furniture such as bookshelves and any other heavy items that are prone to falling. If no cover is immediately available, stand in a corner of the room you are in. Once the shaking has stopped, proceed to the assembly area. The current assembly area for all TPS members is the dirt lot located east of the building (i.e. the parking overflow area closest to Test Ops).

Regardless of the emergency or disaster, there are things you AND your family can do to *prepare* for and *mitigate* the affect of a particular emergency or disaster.

Here's a list of the first 3 things you can expect/need to do in the event of a natural or man-made disaster:

- An Emergency Operations Center will be established.
- If on/off campus contact your Class Leader. Students are expected to comply with Edwards AFB emergency/contingency/Full Spectrum Threat Response procedures.
- Determine the status of your dependent(s).

Everyone at TPS is required to be familiar with Full Spectrum Threat Response procedures to include earthquake requirements.

Audible Warnings: Listed below are the USAF Standardized Alarm Signals and appropriate responses. When heard, take appropriate measures to secure your area, ensure personnel in the immediate vicinity are aware of the Audible Warning and begin taking appropriate action to ensure safety immediately.

ATTACK WARNING	3-5 Minute <b>WAVERING TONE</b> on siren or other device or 3-5 Minute Period of Short Blasts from horns/Whistles or other devices	ATTACK IS IMMINENT, IN PROGRESS OR ARRIVAL OF NUCLEAR FALLOUT IS IMMINENT  <u>Proceed immediately to designated shelter</u> or take other appropriate protective actions. Listen for Additional Instructions
PEACETIME EMERGENCY WARNING	3-5 Minute <b>STEADY TONE</b> on siren or long steady blast on horns, whistles, or similar device	PEACETIME DISASTER THREAT EXISTS

ALL CLEAR	Declared verbally by local official agencies or through Giant Voice	EMERGENCY TERMINATED
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NOTE: All personnel are to remain in their appropriate shelter or assembly area until released by the ranking person on scene.

Personnel Accountability: Ranking personnel at each designated shelter or assembly area should take charge and conduct a headcount for possible reporting. Upon receiving all clear, all personnel will report back to their duty section/supervisor for accountability.

If you are new to TPS or a long time employee, please take note of building evacuation routes, shelter locations, and safety procedures for your area and the areas you frequent.

Please take a few moments to familiarize yourself with the information presented at the following links. Your cooperation and assistance will enable us all to maintain safety and well-being during any emergency.

- [FEMA Earthquake Guide](#)
- [What to do before/during/after an earthquake](#)
- [Earthquake Emergency Supplies Checklist](#)

The Red Cross ([www.redcross.org](http://www.redcross.org)) suggests that you assemble a "disaster supplies kit" at your home. It should contain:

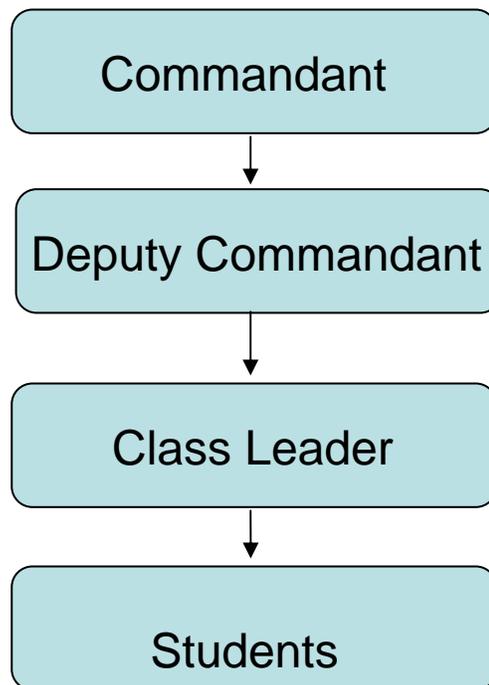
- A first aid kit with essential medication in addition to the usual items.
- A battery powered radio, flashlight, and extra batteries.
- Canned and other non-perishable food and a hand operated can opener.
- Bottled water
- Sturdy shoes and work gloves.
- Written instructions on how to turn off your homes utilities.

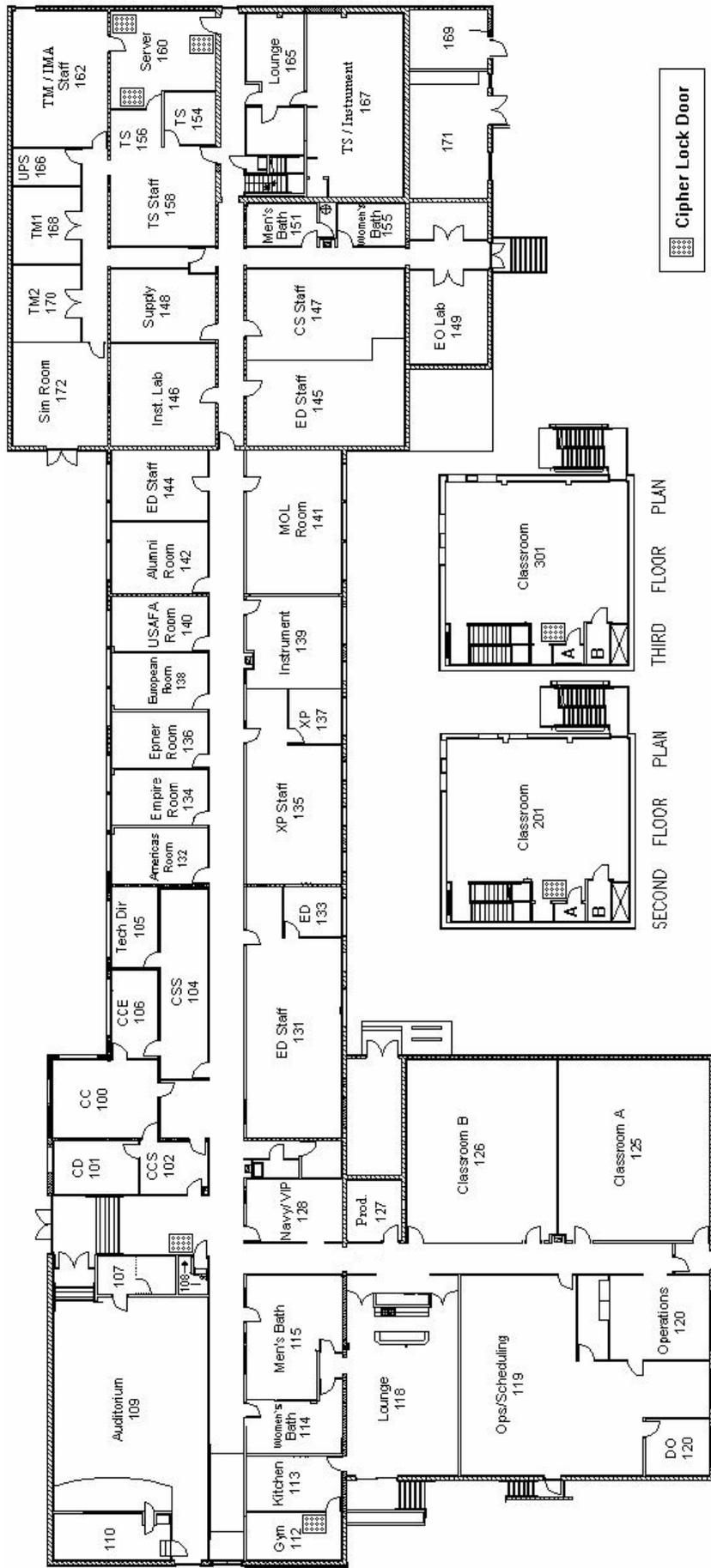
For more detailed information, visit the [California Governor's Office of Emergency Services](#) website.

If you have any Disaster Preparedness questions or concerns, please contact 2Lt Joe Samek, TPS Emergency Management Representative.

## Chain of Command

The academic nature of the Test Pilot School provides a different environment in reference to the military chain of command. Students will use this chain of command to the maximum extent possible to resolve any issues. The Commandant regularly meets with each class to discuss progress and any issues the class brings to the meeting.





SECOND FLOOR PLAN      THIRD FLOOR PLAN

United States Air Force Test Pilot School  
 220 South Wolfe Avenue, Bldg. 1220

### Key Organizations

Students will interface with a number of organizations during studies at USAF TPS. This section summarizes typical reasons students interact with some key offices.

- Commandant's Support Staff (CSS)
  - o Primary emergency POC
  - o "Limited MPF" functions
  - o Family care plan, leave processing, assignment actions, promotions
  - o Miscellaneous military admin requiring commander's approval/signature
  - o Urinalysis program
  - o Awards and Decorations
  
- Education Office (ED)
  - o Primary POC to student leadership
  - o Coordinate/approve academic program changes
  - o Review and disseminate Training Reports
  - o Review/approve casual status requests
  - o Monitor academic progress of students
  - o Review/approve RNLTD changes (that impact graduation or casual status)
  
- Student Support Office (See page 34)

### Class Leader

Class leader positions are **assigned** by the Front Office based on seniority and academic curriculum to assist the student population in conducting normal operations. Specific responsibilities are listed below.

Class leader duties: Class Leaders will

- Take proactive leadership role for their class
- Ensure the good military order and discipline of their people
- Ensure the adherence to this handbook
- Maintain accountability for their class
  - Know their people's duty status
  - Have access to a current recall roster (A current copy of the recall roster will be available from CSS)
- Class leaders are authorized to issue letters of counseling for minor disciplinary infractions to students in their class
- Disseminate directives and applicable information to their class
- Work through student chain of command on routine issues affecting our mission
- Take care of their people!!

## Admissions Requirements

Admission into the USAF TPS is extremely competitive. The best and the brightest of the flying world compete to attend this School. It is not uncommon for potential students to be alternatives two or three times before getting accepted. There are two classes held a year, each 48 weeks each. There are 3 tracks that students can apply for: Experimental Test Pilot (ETP), Flight Test Engineer (FTE), or Flight Test Navigator (FTN). The upper class is called the senior class, while the lower class are called the juniors, determined by what point they are at in their studies at TPS. The class size at TPS varies. Over the past few years there have been over 20 TPS students per class. The classes are normally split, half ETP, half FTE+FTN. It is important to point out that civilians are also permitted and encouraged to apply for the long course program. The current classes have 24 and 22 students, respectively.

The following chart shows the **Eligibility Requirements** for application to USAF TPS:

<i>Course</i>	<i>Time in Service</i>	<i>Education</i>	<i>Experience</i>	<i>Physical Qualification</i>
<i>PILOT</i>	$\leq 10$ yr	<i>BS in Engr, Math or Physics (GPA &gt;2.5)</i>	<i>750 hr or IP (MWS) 12 mo AC in MWS</i>	<i>Annual Flying Class II</i>
<i>NAVIGATOR</i>	$\leq 10$ yr	<i>BS in Engr, Math or Physics (GPA &gt;2.5)</i>	<i>500 hr or IN (MWS)</i>	<i>Annual Flying Class II</i>
<i>ENGINEER</i>	$\leq 8$ yr	<i>BS in Engr, Math or Physics (GPA &gt;2.8)  Tech MS desired</i>	<i><math>\geq 2</math> yr experience in 13XX, 14NX, 21AX, 21CX, 21LX, 21MX, 33SX, 61SX, 62EX 63AX  (civ: <math>\geq 2</math> yr in T&amp;E)</i>	<i>Annual Flying Class III</i>

**Application Recommendations**

While the previous chart shows the minimum requirements for application to TPS, the following chart gives an outline of the general qualifications of the current 2 classes at TPS.

Class	Pilots	Navs/WSOs	Engineers	Aircraft	Services, Nations
07A	12  <b>BS GPA: 3.6</b> <b>MS GPA: 3.8</b> <b>Fly Hrs: 1310</b>	2  <b>BS GPA: 3.5</b> <b>MS GPA: N/A</b> <b>Fly Hrs: 1060</b>	10  <b>BS GPA: 3.4</b> <b>MS GPA: 3.8</b>	<b>A-10</b> <b>B-1 / E-3</b> <b>B-2</b> <b>C-17 / C-9</b> <b>C-160</b> <b>F-15E</b> <b>F-16</b> <b>Mig 21</b>	<b>USMC</b>  <b>Italy</b> <b>India</b> <b>France</b>
07B	12  <b>BS GPA: 3.7</b> <b>MS GPA: 3.9</b> <b>Fly Hrs: 1590</b>	2  <b>BS GPA: 3.0</b> <b>MS GPA: N/A</b> <b>Fly Hrs: 1120</b>	10  <b>BS GPA: 3.5</b> <b>MS GPA: 3.8</b>	<b>B-1</b> <b>C-17</b> <b>C-130</b> <b>C-160</b> <b>F-15E</b> <b>F-16</b> <b>F-18</b> <b>KC-135</b>	<b>USN</b>  <b>Israel</b> <b>India</b>

**Air Force Institute of Technology (AFIT) to USAF TPS program**

The Test Pilot School selects up to eight students per year (3-4 students per class) to attend to the Air Force Institute of Technology at Wright-Patterson AFB, in Dayton, Ohio. These select individuals attend 15 months of class work and thesis preparation prior to completing the USAF TPS curriculum. Once graduated from TPS, these students stay to finish their M.S. thesis (using data gathered during the Test Management phase project) and defend their thesis 3 months after their TPS graduation.

**Foreign and Naval Test Pilot Schools**

From time to time, students are selected to attend different test pilot schools in an exchange program between test cultures. In this vein, students can be sent to the Naval Test Pilot School in Pax River, Md to learn testing techniques from the Navy. Also, USAF TPS has an exchange program with Empire Test Pilot School at Boscombe Down in the United Kingdom, and EPNER (École du Personnel Navigant d'Essais et de Réception) France's Test Pilot School.

**GRE Requirement**

Currently there is no requirement to take the Graduate Record Exam (GRE).

## **Application Process**

Qualified personnel interested in applying for the USAF Test Pilot School should **see AFI 99-107** for the application process details. However the general outline of the application process can be found below.

Prospective students should provide the following forms for the selection board. They can be found at e-publishing or the Edwards AFB website online.

### **AF Form 1711, USAF Test Pilot School Application**

The following must be attached:

Certified transcripts of all college credits.

A resume of flying experience, if applicable (see AFI 99-107 Attachment 2 for format).

#### **US Air Force Pilot and Navigator** applicants also:

Attach a certified true copy of AF Form 942, Record of Evaluation.

Attach copies of all AF Forms 8, Certificate of Aircrew Qualification, from their Flight Evaluation Folders.

Attach a copy of Flying History Report from the Air Force Operations Resource Management System. This report can be obtained from the local Host Aviator Resource Management (HARM) office.

A summary of operational flying experience in the narrative section of AF Form 1711 (limited to space provided), including:

Significant flying experience and activities.

Professional accomplishments and honors.

Engineering-related activities.

Reason(s) the applicant wants to be a test pilot or test navigator.

Career goals in flight testing and acquisition.

**Experimental FTE** applicants also include a narrative on AF Form 1711 (limited to space provided) that summarizes:

Technical experience.

Test experience.

Operational experience.

Engineering-related activities.

Professional accomplishments and honors.

Career goals in flight testing and acquisition.

#### **Civilian applicants** also:

Provide copies of all performance evaluations.

Include a narrative on AF Form 1711 (limited to space provided) that summarizes:

Technical experience.

Test experience.

Engineering-related activities.

Professional accomplishments and honors.

Career goals in flight testing and acquisition.

**Experimental FTE and civilian applicants** are required to undergo a flying Class III physical prior to the TPS selection board. Any medical conditions requiring a waiver will be adjudicated and processed by 95 Med Gp/SGP (Flight Surgeon's office) prior to the TPS selection board. Submit a copy of the most recent **SF 88, Report of Medical Examination, and AF Form 1042**, Medical Recommendations for Flying or Special Operational Duty, along with the application. If a waiver is requested, copies of both the SF 88 and the individual's **SF 93, Report of Medical History**, must be submitted along with supporting documentation (as applicable) to 95 Med Gp/SGP at Edwards AFB.

Submit the AF Form 1711 with all attachments to:

Special Flying Programs Section  
HQ AFPC/DPAOT3  
550 C Street West  
Suite 31  
Randolph AFB, TX 78150-4733.

#### **AF Form 1712, Special Flying Program Recommendation**

All applicants (except those from allied nations) obtain at least one completed AF Form 1712 from their immediate supervisor. Applicants may have two additional AF Forms 1712 prepared by officers who know the applicant's flying and technical abilities firsthand. A maximum of three AF Forms 1712 may be submitted. Recommending officers submit AF Form 1712 by **separate** correspondence directly to:

Special Flying Programs Section  
HQ AFPC/DPAOT3  
550 C Street West  
Suite 31  
Randolph AFB, TX 78150-473

#### **Selection Board**

Applications must be received by Special Flying Programs Section HQ AFPC/DPAOT3 **no later than 45 days before the selection boards meets**. USAF selection boards are held once a year at the Headquarters of the Air Force Personnel Center. The boards are normally held in November and the board selects the TPS two classes for the next year. It is at this point that AFIT-TPS students, and students for foreign TPS schools are also selected. The USAF TPS Commandant Chairs the Chair of the Board. Board members consist of a HQ AFPC Colonel, and at least a majority of the board members must be TPS graduates (Majors or Lieutenant Colonels) who are standing flight test squadron commanders. The AFMC/DO selects board members.

## Academic Policies and Procedures

### Requirements for a Master's Degree

The USAF TPS curriculum is designed to grant a Masters of Science in Flight Test Engineering at the end of the 48 week course (currently seeking approval from Department of Education). Students are required to take all of the 20 offered courses in order to graduate. This is a total of 50 credit hours for the 48 week course. Each of the 4 phases is broken down into 3 or 4 main lecture courses. Along with these courses there are allocated Laboratories or Simulator work and flights. To graduate from the USAF TPS, a student must be in good standing and satisfactorily complete all academic tests, oral and written reports, curriculum flying missions, and complete the comprehensive written and oral evaluations with an overall GPA  $\geq 3.0$  and in good standing.

### Academic Advisor & Graduate Program Coordinators

Each student is assigned a faculty advisor who assists with academic planning and career development. While advisors are available for advice and consultation, students are ultimately responsible for understanding the academic policies of TPS and completing all graduation requirements.

### Grading

TPS student performance is evaluated in five major areas: academics, flying, reports, comprehensive exams, and peer evaluations. The definitions for TPS grades are listed TPS Grade Definitions and the equivalent percentages, letter grades, and grade points are detailed in TPS Grade Equivalents. The expected level of performance for a TPS student is 85/B+.

#### *Grade Point Averages:*

Some graded events at TPS will be graded using a standard 100 point scale (i.e. academic tests). The grades from these events will be recorded as a percentage score between 0-100 and applied towards the overall course grade according to its weight value identified in the appropriate course plan. Based on the level of achievement associated with each letter grade, the corresponding quality point values range from a maximum of 4.0 to a minimum of 0.0

Most other graded events at TPS will be scored using the 5-color scale (i.e. daily curriculum sorties and reports). These events may have one or more areas to be graded. The instructor will assign a color grade for each of these areas which will in turn correspond to the Single Event Grade for that color. Then, the overall grade for that event will be tabulated according to the assigned grades and weight values for each area. For all graded events at TPS, students will be made aware of the areas to be graded and their associated weight values before the event is assigned.

TPS Grade Definitions

<b>Blue</b>	Satisfactory	Exceeds Standards	Above Average	Safe
<b>Green</b>	Satisfactory	Meets Standards	Average	Safe
<b>Yellow</b>	Marginal	Below Standards	Below Average	Safe
<b>Orange</b>	Unsatisfactory	Well Below Stds	Well Below Avg	Safe
<b>Red</b>	Unsatisfactory	Well Below Stds	Unable	Unsafe

### TPS Grade Equivalents

Color	% Range	Letter Grade	Grade Point	Single Event Grade
Blue	90-100	A	4.00	95
Green	87-89	A-	3.7	<b>85</b>
	83-86	B+	<b>3.3</b>	
Yellow	80-82	B	3.0	75
	77-79	B-	2.7	
	73-76	C+	2.3	
Orange	70-72	C	2.0	60
	50-69	D	1.0	
Red	0-49	F	0.0	25

### Honor Policy

Honor is the highest form of self-respect and is a hallmark of the military profession. Honor is invariant in the military. Integrity is one of the Air Force’s key Core Values and should be up held at all times. The important ethical principles of integrity apply to the academic conduct of every student. At the USAF TPS, the military tradition of honor is applied to the following policies:

*Plagiarism* - The act of appropriating the literary composition of another, parts or passages of their writings, or the ideas or language of the same, and intending to pass them off as the product of one’s own mind. An example is copying verbatim without quotation marks with the intent to claim that material as one’s own work is plagiarism, as is the intentional use, without credit, of a sources sentence structure and style with only minor word changes. Intent is established based on consideration of all circumstances and evidence presented. The correct method for giving credit to a source in written work is to use quotation marks and an accompanying footnote when quoting directly and a footnote when paraphrasing. In the case of oral presentations, credit must be given for direct or paraphrasing of direct quotes.

Plagiarism of any form will not be tolerated at USAF TPS; one’s work must be one’s own. Intentional plagiarism—knowingly passing another’s work as one’s own—is grounds for a continuum of administrative actions. Unintentional plagiarism—inadvertently borrowing words or ideas attributable to another individual—is likewise incompatible with the ideals of TPS. Students are encouraged to maximize the development of their analytical, diagnostic, and written and oral communication skills while at TPS. Over-reliance on “gouge”—preexisting coursework, either written, printed, electronically, or verbally conveyed—hinders development of these critical test skills. The following gouge is specifically prohibited: (1) written or oral communication concerning the content of the TPS comprehensive examinations, (2) end of course examinations with the exception of prior examinations distributed by course instructors for the purpose of exam preparation, and (3) written or verbal communication concerning the planning and execution of syllabus check rides. While data can and should be shared where appropriate, staff and students are reminded that analyses, conclusions, and recommendations based on the data are to be personal and/or individual efforts; exceptions are to be specifically briefed by the staff phase chief. Daily flight reports, oral reports, and other written reports must include the student’s own analysis, and will not include word for word comments from preexisting reports—printed or in electronic form—without due credit. Suspected policy violations will be handled IAW USAF Test Pilot School “Gouge” and Plagiarism Policy Letter. Adherence to these policies is essential in maintaining the high ethical standards for which TPS graduates have been known for over 60 years; our nation and war fighters deserve nothing less.

*Cheating* - The act of giving or receiving improper assistance such as, but not limited to, gaining unauthorized access to faculty materials that have not been released for student use; copying answers from another's examination; using texts, notes, issue materials, or other references not authorized for examinations or other assigned work; using previously written research papers, briefings, or other types of student work normally assigned by the school, provided by former students of the course; knowingly permitting another student to copy one's writing assignments, speech or briefing materials, or answers from an examination paper; and collaborating with other persons on individual assignments except as specifically authorized by the school.

*Misrepresentation* - The act of making an assertion to intentionally deceive or mislead. Misrepresentation may be an oral or written statement that is misleading or deceiving and meant to be so; for example, false reporting. Students enrolled in a course who previously took the same course (or a variant of it; for example, a nonresident version of the same course) and attempt to resubmit research papers or other work in fulfillment of a current school assignment, while disguising the fact that it is a resubmission, would be guilty of misrepresentation.

Confirmed failure to observe these USAF TPS policies may result in disciplinary action under UCMJ, may include dismissal from TPS, and may become a permanent part of the student's personnel file.

### **Late Policy**

The due date for reports will be set by each instructor. The standard turn-in time is by 0800 on the due date. Barring extenuating circumstances, late submissions will result in a minimum 10% deduction per day from the final grade. Regardless of the final grade possible, all coursework must still be completed to a satisfactory standard prior to graduation.

## **Academic Freedom**

The Air University Instruction (AUI) 36-2308, *Academic Freedom* (Attachment 17-1), contains Air University's formal policy on academic freedom. Additionally, Air Force Instruction 61-204 provides guidance on *Disseminating Scientific and Technical Information*. TPS operates in accordance with the guidelines of these instructions regarding academic freedom. TPS instructors and students publish research findings of curriculum and staff test management projects and are given the widest possible latitude to express their views within the constraints of security classification guidance and the principles of ethical test reporting. All staff and student test reports will be checked for security and all reports cleared for release at the appropriate level through a formal review process fostered by the public affairs office and local directives.

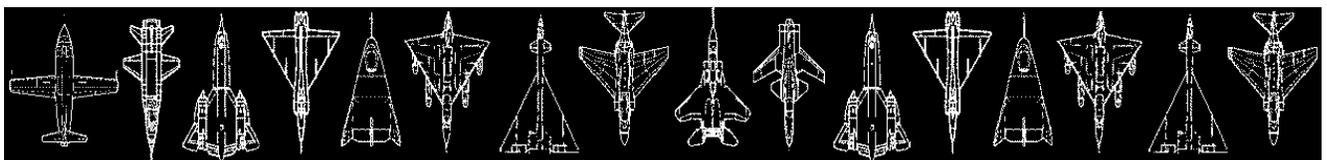
To encourage open debate and honest intellectual exchange, TPS has a "non-attribution" policy. As a result of this policy, all participants may speak candidly and with confidence in the knowledge that their professional remarks will not be attributed directly or indirectly to them in the presence of anyone who was not present when the remarks were made. Unclassified information may be used freely. But without written consent, neither the speaker nor any element of TPS may be identified as the source of the information. Free and open discussion of opinions and views of speakers in the academic environment of the school is encouraged. At the same time, any references to the remarks of speakers outside this academic environment will be so general that the speaker's identity is positively protected.

## **Student Life (Typical Day as a TPS Student)**

Students at USAF TPS rarely have a rote schedule. However a typical day will include a combination of flying and academics. The day normally starts off with brief in the morning for the day's sortie. Depending on class (junior or senior) the student will be flying in the morning or the afternoon. The student will step for the sortie, or will go to morning block of academics. If there is morning flight academics will be held in the afternoon. Other activities such as simulator education, control room education, TMP preparation, and laboratories will also be occurring during the day.

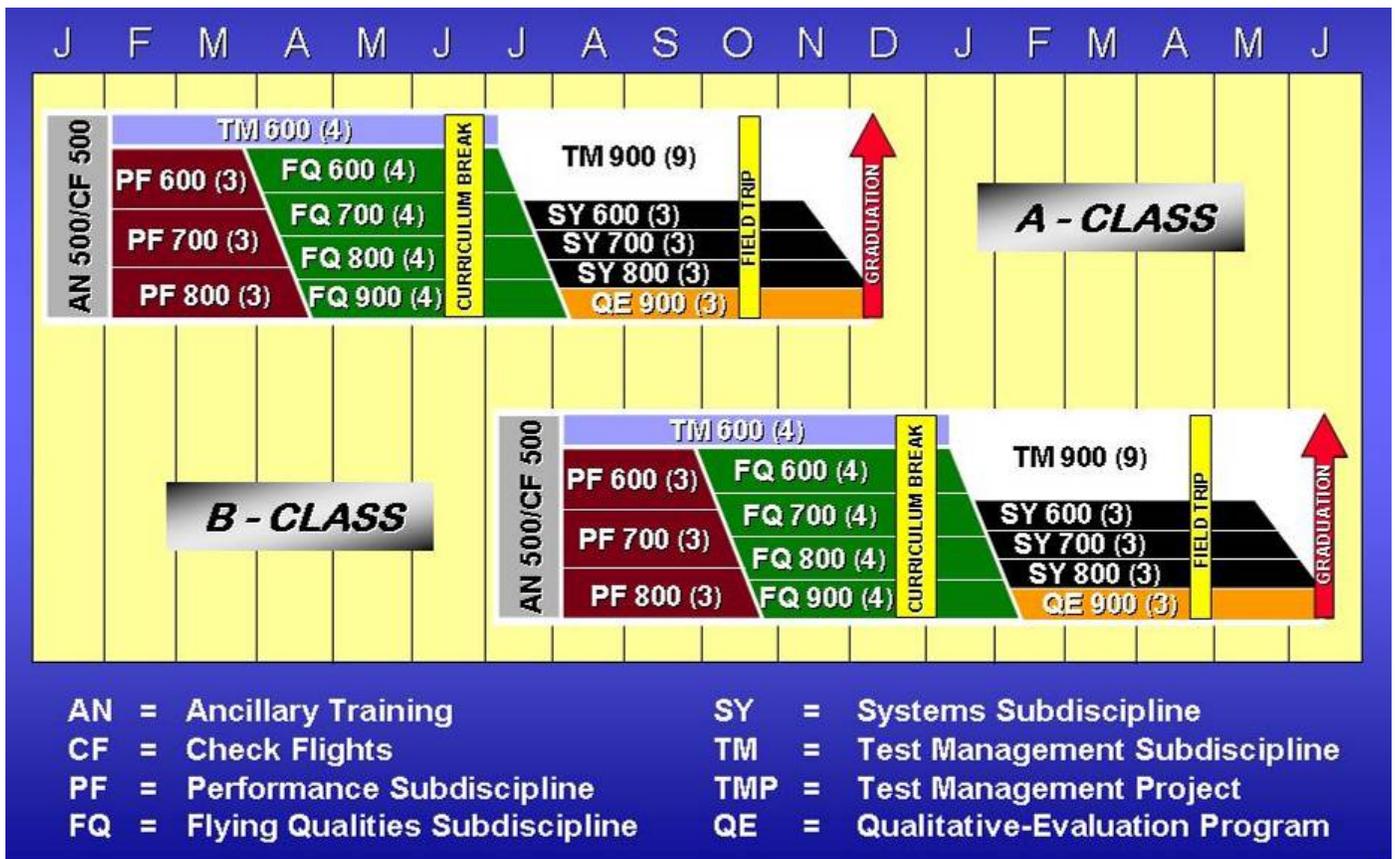
## **4 Main Subdisciplines**

There are 4 main subdisciplines taught by the USAF TPS Education Division (ED). These are Performance (EDP), Flying Qualities (EDF), Systems (EDS), and Test Management (EDT). The Performance Branch is responsible for the PF 600/700/800 courses. The Flying Qualities Branch is responsible for FQ 600/700/800/900. The Systems Branch is responsible for SY 600/700/800. The Test Management Branch is responsible for TM 600/900. Additionally, the USAF TPS Operations Division (DO) is responsible for ancillary training (AN 500), check flights (CF 500), and qualitative evaluations (QE 900) and scheduling/executing all TPS curriculum sorties. TPS/DO maintains all flying grade books.



**Degree Schedule**

Below is a general schedule displaying when the various graduate courses will occur throughout the 48 weeks.



## Academic Support

### Computer Policy

The Technical Support (TS) Division of TPS provides and supports the computers at the school. The 95 Communications Group provides the Network infrastructure.

You will be issued a notebook computer and accessories for your use during the course. You will need a computer account on the Edwards AFB domain to use your computer. You will need to present your Common Access Card (CAC) and current AF Information Assurance (IA) certificate to TPS/TSP in Room 158 to establish your account. If you are unable to produce a current IA certificate, Communications will create an account with limited network rights to allow you to reprint the certificate or accomplish the training.

In addition to your notebook, you will have access to other computer resources at TPS. A monochrome laser printer is located in your workroom. Each briefing room has a computer to facilitate mission briefings. Room 122 is a video production room with equipment to review video and convert them to computer files. A color laser printer is also available in this room.

Network resources include public drive space on dedicated TPS file servers. You will also have quota-limited private storage space on the Edwards AFB file servers. All servers are backed-up daily, so file recovery can be accomplished if old files are accidentally deleted.

The TPS Portal (<https://tps.edwards.af.mil>) will be used to transfer information to you as well as providing virtual drop boxes for your class assignments. Base wide information is distributed via the Edwards Centernet Portal (<https://centernet.edwards.af.mil>). Since these portals are intranets, they are not available from outside the Edwards AFB network.

Internet access and e-mail services are provided through the NIPRNET. All use falls under the policies established by the DoD, USAF, AFMC, and AFFTC. You will find access to unacceptable web sites is blocked, and functionality of many web sites is disabled. Many types of attachments to e-mails will also be stripped from incoming and outgoing mail. The most current information may be found on files located at [https://centernet.edwards.af.mil/95CG\\_SCS/FAQs/index.html](https://centernet.edwards.af.mil/95CG_SCS/FAQs/index.html).

Assistance may be obtained within the school through the Computer Systems Branch, TPS/TSP, by visiting Room 158, calling ext. 5-6687, or e-mailing a TSP member during duty hours. Additional assistance is available through the Communications help desk by calling ext. 7-3444 or filling out a trouble report form on the Edwards Centernet.

### USAF TPS Portal

The USAF TPS Portal is an online access point for students and staff for the entire curriculum taught at TPS. Housed on the Portal are the most current slides for lectures, flight cards, virtual drop boxes for reports, and many other resources. This Portal is only available on to TPS faculty, staff, and students on a TPS computer with a Common Access Card. Any students with problems accessing or utilizing the USAF TPS Portal should contact USAF TPS/TS.

On a TPS computer, the Portal can be found at: <https://tps.edwards.af.mil/default.aspx>

## Textbooks

For their day to day studies 15 loose leaf text books are issued to the students. These books line up with the courses being taught at TPS. Contained in these books are current lecture slides, Flight Test Techniques and Lab Test Techniques slides and mission planning slides. There is also space for the students to add their own flight cards and reports. These books are:

AN 500 – ANCILLARY TRAINING  
CF 500 – CHECK FLIGHTS  
PF 600 – FIXED WING AERODYNAMICS  
PF 700 – PERFORMANCE DATA STANDARDIZATION  
PF 800 – PERFORMANCE OPTIMIZATION  
FQ 600 – UNAUGMENTED AIRPLANE MOTION  
FQ 700 – FLIGHT CONTROL SYSTEMS TESTING  
FQ 800 – STALL/DEPARTURE/SPIN AND FAILURE STATE TESTING  
FQ 900 – HANDLING QUALITIES AND ENVELOPE EXPANSION TESTING  
SY 600 – HUMAN FACTORS AND AVIONICS  
SY 700 – AIRBORNE SENSORS  
SY 800 – WEAPONS AND INTEGRATED SYSTEMS EVALUATIONS  
QE 900 – SINGLE-LOOK QUALITATIVE EVALUATION PROGRAM  
TM 600 – TEST PLANNING & REPORTING  
TM 900 – TEST MANAGEMENT PROJECT AND COMPREHENSIVE EXAMS

In order to assist students in their studies at USAF TPS, they are issued 10 bound and stamped text books for their own professional library. These books are:

Introduction to Flight  
Introduction to Aircraft Flight Mechanics  
Intro to Airborne Radar  
EW102: A Second Course in Electronic Warfare  
Avionics Navigation Systems

Fundamentals of Aerodynamics  
Flying Qualities and Flight Testing  
EW101: A First Course in Electronic Warfare  
Testing and Evaluation of Infrared Imaging Systems  
Design and Analysis of Experiments



## Personnel Policies and Procedures

### *In-processing*

Upon arriving at USAF TPS, students should have their official orders endorsed at the Commandants Support Staff Section (CSS) where they will sign-in and be scheduled for base in-processing. CSS is located in at USAF TPS in Room 104. An in-processing checklist detailing all the steps to take to in-process will be given to you at CSS and must be completed and returned.

Those desiring military housing should immediately report to the Housing Office located on Forbes Avenue Bldg.1405. The phone number is (661) 277-6547 or DSN 277-4506.

Students should have the following items in their possession during base in-processing: military Common Access Card or DoD ID card, 25 copies of PCS original orders and endorsements, medical and dental records, personnel records, flight records and completed copies of all forms and handouts provided during unit in-processing.

Students are to wear the appropriate military uniform of the day during in-processing (see Dress/Attire Regulations on page 29). In-processing will be one or two weeks before the beginning of classes.

As soon as possible, USAF members should update their personal information in the virtual MPF (<http://www.afpc.randolph.af.mil/vs> ). Examples of information you will need to update will be home address, phone number, and e-mail address as well as updating your virtual Record of Emergency Data (vRED).

If you have not already done so, establish a MyPay account at <https://mypay.dfas.mil/mypay.aspx> with DFAS (Defense Accounting Service) to have access to your LES and manage and view your pay.

### *Classroom Conduct*

Students are expected to be professional and courteous at all times, to include practicing proper military customs and courtesies. Students will address instructors per customary academic/military titles. This includes military instructors of equal or lower rank. First name rapport is not appropriate in the classroom environment. Students are required to wear the military uniform to all classes in accordance with AFI 36-2903. Members of sister services will adhere to their respective branch's uniform requirements.

Cell phones, pagers, and PDAs must be turned off or muted during class time.

If an instructor fails to appear to class within ten minutes of class start time, the class will inform TPS/ED and the appropriate branch chief.

*Eating and Drinking in Classrooms/Labs:* In most classrooms, eating and drinking is permitted, as long as the student cleans up all food wrappers and drink bottles. Some labs have stricter rules. There will be **no drinking or eating** with in the TPS Control Rooms. Please abide by any additional rules posted in those labs. Cleanliness of the TPS complex depends on how well the students take care of it; therefore, all personnel are expected to properly dispose of their trash.

## *Dress/Attire Regulations*

*General:* TPS's dress code described below will be in effect between the hours of 0730 and 1700, Monday through Friday (less holidays) or at any other time when meeting with and greeting visiting personnel in an official capacity. Personnel in an off-duty status going to and from the Base Exchange, U.S. Post Office, and other facilities located on the Base are not required to conform to the school attire dress code described in this instruction, but will always present a neat, orderly appearance. Military uniform regulations for grooming shall be met at all times.

*Military Uniform:* Military uniforms are required at all times for all U.S. and international students, and should be worn according to the guidelines outlined by their respective service or country. Military students attending TPS shall not wear civilian clothing between the hours of 0730 and 1700 on duty days (unless on leave or pass status or specifically authorized).

In accordance with existing Air Force Instruction 36-2903, flight jackets may be appropriately worn by eligible personnel. USMC aviators may wear leather or nomex flight jackets per USMC uniform regulations. Authorized USAF students may wear the leather A-2 flying jacket with flight suit, hospital whites, or service uniforms (not Service Dress uniform). Other services may also "relax" uniform requirements to include regulation optional items according to weather conditions and seasons.

Wearing of a cell phone or beeper (one, not both) in uniform is authorized and it must be solid or covered in black, silver, dark blue, or gray, and must be conservative. May be clipped to waistband or purse or carried in left hand. Only one may be worn on the uniform belt. Cell phones will not be used while walking in uniform. Hands-free headset is not authorized. Edwards Air Force Base has a strict policy of hands-free headset only when driving.

Students shall wear nametags in accordance with their service uniform policy. The service-mandated standardized nametag will be worn on flight suits.

A black backpack is the only color AF students can wear with the blue uniform. They may be worn over both shoulders. Black, Olive Drab or Woodland Camouflage can be worn when in the Battle Dress Uniform or Flight Suit.

All personal items, including backpacks, purses, briefcases, books, etc, must be secured at all times. They must also be labeled with the following information: name, rank, and TPS class. If personal items are found unattended, not labeled, and deemed safe by security forces, they will be sent to the commandant's office. Violators of this rule must meet the commandant to retrieve their personal item.

*Civilian Clothing:* Flight suit is authorized for civilian students while attending TPS. Civilian students shall ensure that their dress and personal appearance are appropriate for the occasion and will bring credit to themselves and the military services. They are expected to conduct themselves in a manner appropriate to a business environment at all times while on base. Business casual does not have a requirement for a coat or tie. Specifically, it includes a dress quality collared shirt or turtleneck and dress slacks for men and either a dress or dress blouse, dress slacks/skirt for women. Shirt and shoes should be of similar style and quality. Socks are required. Pressed khakis and turtlenecks are acceptable but do not include collarless shirts and flight deck jerseys. Logos on the collar or extreme logos elsewhere on the garment are not permitted.

Designated attire established herein represents a minimum expectation. Nothing in this policy precludes dressing to a higher standard.

## **Recall Roster**

The TPS/CSS compiles a Recall Roster for the students in cases of emergency or exercises. USAF TPS students should carry a Recall Roster with them at all times. See the class leader for the most current roster.

## **Leave/Passes/Duty Status**

Normal duty days for students are Monday through Friday from 0730 to 1700 hours, excluding holidays. To be considered present for duty: the student must be in the TPS complex. During the mid-course break, even though no formal classes are in session, students remain in duty status unless on leave or pass. During this time, students may be called in to perform military tasks.

*Missing Class:* Attendance at all class sessions and exams is mandatory except for extenuating circumstances. For absences due to medical or dental appointments, the student must notify his/her instructors in advance. If a student seeks to take leave for justifiable reasons during an academic term (e.g. family wedding, supporting an ill family member), he/she must obtain concurrence of all instructors of any classes that will be missed, the staff advisor, and the TPS/CD before submitting a leave request.

*Leave Procedures:* Air Force students request leave through LeaveWeb located at the TPS Portal (or <https://leave.edwards.af.mil/leaveweb/leaveweb.aspx>). All students should submit their leave requests at least five days in advance, but no later than one day (with emergency leave situations being the exception) to the appropriate approving official (usually this will be the staff advisor, not the class leader). Students are required to fill out the electronic AF Form 988 on-line. CSS will process all leave requests in a timely manner. A member's leave is not approved until validated by CSS and a leave number has been assigned. Leave is considered unapproved if it is not validated by 1700 the day before the leave status begins. It is the student's responsibility to ensure leave requests are approved by their staff advisor and validated by CSS prior to departure to prevent possible administrative actions. For peak leave periods (Thanksgiving, Christmas, mid-course break), your requests should be submitted as early as possible. If a student is going outside the country, they must contact the Student Services Office for approval.

*Overseas Leave Procedures:* Before submitting your request through Leaveweb, you must obtain your Pre-Foreign Travel Questionnaire from the CSS Administrative Assistant, complete the form, and turn it into the Edwards Security Office. OSI and FDO will should be notified for a country specific Anti-Terrorism Briefing.

Travels overseas to include: Jamaica, Virgin Islands, Mexico, Canada, etc and on any Caribbean Cruise (Vacationing, TDY, PCS, or deploying).

If a student desires to cancel an approved and validated leave, he/she should do so via LeaveWeb not later than the effective date of leave. Failure to cancel leave prior to COB on the effective date could result in the member being charged up to the date of cancellation.

If a student needs to extend ordinary leave beyond the original last day of chargeable leave, prior approval (verbal, e-mail, or written) by the student's staff advisor is required. The actual last date of leave must be updated in LeaveWeb when the student returns and signs in from leave.

Each student is cautioned that they must be in the immediate vicinity of their duty station upon commencement and termination of leave. Immediate vicinity is considered to be the distance from the residence from which member commutes daily to and from school/work (see discussion in subsequent section).

Navy and Marine students desiring leave must follow the directives and procedures of their controlling headquarters. Leave for International students is worked through the Student Services Office.

*Local Area Discussion:* “Local area” is the accepted location of a student during a “duty day.” Generally, this is their home when they are not in class or school during scheduled classes and exams. They are allowed to travel in the vicinity of both these locations in support of their duties. Since taking care of families is a duty, trips to the hospital, the mall, airports, schools, soccer practice, spouse’s work location, and a myriad of other locations are OK.

If one can look their boss in the eye and ask permission to run the errand during the duty day, then the errand is probably in the “local area.” If they have decided to take a “clearly recreational outing requiring significant travel” they should probably take leave or ask for a pass (see discussion about passes in later section). The general local area is set by the Commandant and the Deputy Commandant. The general areas are the San Francisco metropolitan area to the north, the San Diego metropolitan area to the south, the Las Vegas metropolitan area in the east, and the Pacific coast to the west. If you are leaving your home for the weekend or holiday, but will still be within the above prescribed local area, students should ensure that a **current phone number that the student will answer 24 hours a day** is provided to your class leader. Students should plan to obtain a pass or take leave unless the trip is clearly in support of their duties.

*Special Leave Situations:* Emergency leave will be granted depending upon the merits of each individual case. Only the TPS/CC can approve emergency leave. Students should inform their advisors and then request emergency leave through TPS/CC or TPS/CSS who will expedite the request. During non-duty hours, the member or supervisor should contact the TPS/CC as stated on the Recall Roster.

Students who will undergo medical procedures are required to coordinate and submit requests before beginning convalescent leave. The medical staff will provide the leave form to the student with the doctor’s recommendation, but only the TPS/CC can approve convalescent leave.

*Passes:* A pass is an authorized absence from a person’s normal duty station. No mileage restrictions are imposed on members with passes, however common sense and Operational Risk Management principles apply for driving distances. A regular pass begins at the end of working hours on a given day and expires with the start of normal working hours on the next workday. Weekends are usually pass periods.

Air Force members are on regular pass status when they are on their usual time off after duty hours. TPS recognizes 1700 hrs or the end of a scheduled class of any duty day; whichever is latest, as the start of the regular pass. The end of the regular pass will be 0730 hrs of the next duty day.

The USAF TPS Commandant can authorize a regular one-day pass during break periods. One-day passes can not be combined with weekends, holidays, or other passes. As such, one-day passes can occur only on Tuesdays, Wednesdays, or Thursdays.

When returning from travel on a special pass, booking the last flight home puts the students at risk of missing class the following duty day. Students must use good judgment in booking their return flight. Failure to return at the end of the pass window will result in the member being charged leave for the entire period, unless there are mitigating circumstances (like travel difficulties) and may result in administrative/punitive action.

### **Booster Club**

The purpose and objectives of the Booster Club will be to support the morale and welfare of the USAF TPS personnel through various functions, including but not limited to, hails and farewells, squadron parties, and the purchasing of gifts and other items for special occasions. Those interested in participating may contact the Booster Club President 2<sup>nd</sup> Lt Justin Eise at 277-9867.

### **Pay Notification**

Go to <https://mypay.dfas.mil/mypay.aspx> and establish your MyPay account to manage your pay. Leave and Earning Statements (LESs) are now available on-line. Contact your financial service's administration office for further information.

### **Sexual Harassment and Assault**

TPS's leadership is committed to providing all Air Force employees, military or civilian, with an environment free of personal, social, or institutional barriers. Sexual harassment and assault will not be tolerated, and those who do not comply will be held accountable. If you need to report a sexual assault, the number for the Sexual Assault Response Coordinator Hotline is 661-209-0115 and the Edwards Office number is 275-2365. If you need to report sexual harassment you may call the Military Equal Opportunity office at 277-4440.

### **Smoking**

IAW AFI 40-102, Tobacco Use in the Air Force, use of tobacco products by students is prohibited during school duty hours. Regular "lunch/meal" breaks are not considered school duty hours. IAW AFMC directives, all designated smoking areas must be at least 50 feet away from points of facility ingress/egress, building windows, and HVAC intake sources. The designated smoking area at TPS is patio on the side of TPS through the sliding glass door.

### **Unauthorized Commitments**

An Unauthorized Commitment occurs when someone, either deliberately or unintentionally, bypasses the proper channels in the supply department and contacts a vendor and requests that supplies or services are provided to the government. The outcome is a personal liability for the supplies or services obtained. Students are strictly prohibited from contacting vendors to order supplies or services. Supply department personnel are available to assist in the procurement of authorized supplies and equipment.

### **Urinalysis Program**

Active duty Air Force members assigned to TPS are subject to random urinalysis testing. Members will not be notified of the test until two hours prior, at the earliest. When notified, the member must sign/date the notification letter then report to the Clinic with his/her military ID card. After the member has given the required specimen, personnel from the Clinic will annotate the RIP or letter with the date/time specimen was obtained, then sign the RIP or letter. The completed RIP or letter must be returned to the Commander's Support Staff immediately after the urinalysis test has been accomplished. Students are authorized to miss class to complete this appointment.

## **Out-processing**

*USAF Students* – Based on the unique demands placed on USAF TPS students, out-processing takes place after graduation. Students must stop by TPS/CSS and pick up an Out-processing check list. The list must be completed and turned back in before leaving the Test Pilot School. The students are considered “on-duty” post graduation and should not be charged leave for this time period (unless leave is take during the curriculum break). The student’s travel days begin on the day he/she departs from Edwards AFB and end when he/she in-processes at the gaining unit.

*Sister Service Students* - Upon graduation, sister service students will report to TPS/CSS office for an out-processing checklist. This checklist will include specific service instructions for out-processing and PCS. Complete the checklist and return to CSS office prior to departing the area.

*Civilian Students* - Upon completion of USAF TPS, civilian students must visit the CSS for an out-processing checklist. Non-DoD civilian students who complete and have no further research or business with USAF TPS or Edwards AFB are required to turn in their issued based ID card and car decal (MPF Bldg. 2419) after completion of their out-processing checklist.



## **Student Services Office**

The combined academic course load and flying schedule can often times be intense for students at USAF TPS. Therefore the Office of Student Services located in USAF TPS Room 104 provides support and services for the students and staff of TPS. Below is a list of services that this office can assist with.

**Student Orientation** – When a new class comes to the school, the orientation held for the students is planned, coordinated, and executed by Student Services.

**Housing Office** – Since students are required to live on base, USAF TPS ensures housing for all incoming students. Any difficulties may be reported to Student Services.

**Records Custodian** – Once the students arrive and in-process to USAF TPS, Student Services maintains application forms.

**Messages** – Any messages that come for USAF TPS students are routed through the Student Services office.

**Foreign Student Representative** – USAF TPS will have 3-4 students from foreign countries in each class. The Student Services Office takes care of all Embassy contact, paper work, language barriers, housing issues, etc.

**Other Services Student Representative** - Every class of TPS students also has at least one pilot or engineer from a visiting service (Navy or USMC). The Student Services Officer takes care of all of these students paper work, scheduling through the other service's commands, housing issues, etc.

**Foreign Disclosure** – The Student Services Office is the Foreign Disclosure office for USAF TPS.

**Home town news releases** – News releases are sent to at the request of military personnel by the Student Services Office.

**Official Passports** – Students are informed about official passport applications by Student Services. These are also tracked by Student Services for students' field trips and staff TDYs or Field Trips.

**Graduation** – When a class is preparing to graduate, the Student Services Office will plan, coordinate, and execute the graduation ceremonies. Everything from the guest speaker to the invitations is handled by Student Services.

**Public Affairs** – Student Services acts as the Public Affairs office for the USAF TPS.

**Historian** – Any questions about USAF TPS history should be directed towards the USAF TPS Student Services Office as it is the official historian.

**Distinguished Visitors (DVs)** – Any DVs that come to speak at USAF TPS are scheduled as well as the announcement of the dates and times of the lectures are handled by Student Services.

Any questions regarding the above services contact the Student Services Office at: (661) 277-9933

## Short Courses Offered at the Test Pilot School

Historically the Test Pilot School has taught two eleven-month long courses each year. Recently however, in response to the needs of the aerospace community TPS has began teaching short courses. These classes stem from the same material taught to the full-time students, but focus on a more limited while still well rounded curriculum to maximize education in the time allotted. The structure and execution of these courses are diverse and flexible by nature. This allows customization of the course to fulfill specific customer requirements. Each of the current offerings is detailed throughout this brochure.

Please note that some of these courses require a tuition fee. The costs are dependant on the scope of the course, resources used, and the number of students attending. Please contact the Special Courses Division for further information at:

Test Pilot School  
220 South Wolfe Avenue  
Edwards AFB, CA 93524-6485  
**Phone:** (661) 277-3000 DSN 527-3000  
**Email:** TPSShortCourses@edwards.af.mil  
**Website:** <http://www.edwards.af.mil/library/factsheets/factsheet.asp?id=6467>

### **Aerospace Vehicle Test Course**

The course is intended to educate USAF engineers to plan, provision, execute, and report on testing of the next generation of USAF space vehicles. The course consists of approximately 80 hours of academics supplemented with projects, simulation, fieldtrips, and flying. Attendees must either have a degree in Aeronautical, Aerospace, or Astronautical Engineering, or have considerable experience in one of these fields. A general working knowledge of these areas is assumed. The duration of this course is one month.

### **Unmanned Aerial Vehicle Flight Test Engineering**

This course is intended to educate and train personnel on the various aspects of flight testing Unmanned Aerial Vehicles (UAV), Unmanned Combat Aerial Vehicles (UCAV), and Remotely Piloted Vehicles (RPV). It is aimed at those new to UAV testing, or those in need of a refresher. A basic knowledge of Flight Test is assumed. The course is 3 weeks long, and consists of approximately 40 hours of academics focusing on systems, system of systems, and interoperability. Additionally, students will have the opportunity to operate EO/IR and radar labs, fly a simulated Global Hawk mission, and fly a BAT 3 UAV mission to collect data for a test report.

### **Electronic Warfare Flight Test Engineering**

This introductory Electronic Warfare course consists of 20 hours of academics and two flight test sorties. This course is targeted to those new to EW flight testing and to those in need of a refresher. The course will cover the necessary background material, and then cover EW flight test issues. The first 4 hours will be an overview of EW and an introduction to Electro-optical, Infrared Weapons, and counter-measures. The next 12 hours consist of an introduction to radio propagation, receivers, emitters, ECM concepts, and jamming techniques. The last 4 hours of academics cover the flight test techniques used in EW flight testing, EW OT&E, and AFFTC EW capabilities. The course also includes labs on the academic topics. The course finishes with two EW flight sorties flown against the IFAST.

### **Test Management**

The target audience of this course is testers new to the T&E community. For the most part, the course is intended for non-TPS graduates, although TPS graduates who have returned to conduct T&E after a prolonged absence could take this course as a "refresher." The primary objective of this course is to tie together the entire T&E process. This top down approach begins with the purpose of T&E, continues with flight test techniques (FTTs), and ends with a flight test report written by the student. The student will receive the flight training and acquire data for a flight test report in a glider at the Mountain Valley airport in Tehachapi, CA or in a Cessna 172 at the Edwards AFB Aero Club.

### **Equations of Motion**

The goal of this course is to help students grasp the basic equations of motion of aircraft and also understand the simplifications used that make the equations feasible. Academic subjects include the stability derivatives and the classical modes of motion in lateral-directional and longitudinal directions. Two glider sorties will be flown out of the Mountain Valley Airport in Tehachapi, CA during which students will receive flight training and acquire data for a flight test report on the classical modes of motion.

### **Propulsion**

This course is targeted as an introduction or refresher for personnel working with Air Force propulsion. Block 1 of this course will address USAF engine readiness. Block 2 will cover propulsion basics. Blocks 3, 4, and 5, will address performance trends and testing, cycle analysis, engine components (inlets, fans, compressors, combustors, turbines, afterburners, and nozzles). The course wraps up with Block 6, operability and controls.

### **Senior Executive Course**

The target audience for this course is senior civilian government officials and General officers not familiar with the flight test community and its practices. This is a 3-day course that introduces the student to developmental flight test basics, mission conduct, and operational envelope expansion testing. Each day consists of academics followed by a sortie to practice hands-on the theory taught in the classroom. A T-38 sortie is used to demonstrate the flight test basics portion of the course. A first-flight scenario is flown in a C-12 and is used to demonstrate how teamwork is used for successful mission conduct in the test execution part of a test program. Lastly, an F-16 limit-cycle-oscillation sortie is flown with the student to demonstrate an operational envelope expansion test mission, and to demonstrate the cooperation necessary between the flight test crew and a control room team.



## Accreditation

American Council of Education (ACE) accreditation has been in place since July 1974 (updated July 1998) to recommend selected coursework for transfer credit to other higher institutions.

<http://www.militaryguides.acenet.edu/ShowAceCourses.asp?aceid=AF-1606-0186>

<http://www.militaryguides.acenet.edu/ShowAceCourses.asp?aceid=AF-1606-0187>

The National Advisory Committee on Institutional Quality and Integrity of the Department of Education (NACIQI – DOE) will be reviewing the USAF TPS program the first week of April 2007. The results from this board will be then taken to Congress where it will be determined if full graduate school accreditation status will be awarded to TPS. Once this is approved, USAF TPS hopes to grant the Master of Science in Flight Test Engineering (M.S.F.T.E.) to its graduates.



## USAF TPS Command Leadership

### Commandant (CC), USAF TPS – Col Andre A. Gerner

Commandant	B.S. AE, USAFA, 1981
TPS Aircraft: T-38/Gliders	M.S. AAE, University of Washington, 1982
	M.S. Nat'l Security Strategy, Nat'l War College, 2001
	USAF TPS Class 91A – ETP

### Deputy Commandant (CD), USAF TPS – Lt Col Mark A. Giddings

Deputy Commandant	B.S. EE, University of Florida, 1985
TPS Aircraft: C-12/T-38	M.S. Aerospace Science Tech, University of Dayton, 1995
	M.A. Operational Art & Military Sci., Air Univ., 2002
	USAF TPS Class 97B – ETP

### Technical Director (CT), USAF TPS – Mr. John L. Minor (civ.)

Technical Director	A.S. Electronics Tech, Yuba College, 1979
TPS Aircraft: P-3	B.S. EE, University of New Mexico, 1983
	M.S. EE, University of New Mexico, 1984
	USAF TPS Class 87B - FTE

## USAF TPS Graduate Program Faculty

### Curriculum Standards Division (CS) Faculty

Director, Curriculum Standards Division – Lt Col Gregory P. Gilbreath

Test Pilot Instructor	B.S. AE, Virginia Tech, 1991
TPS Aircraft: F-16	M.S. AE, AFIT, 2001
Flying Qualities Stores	M.A. Operational Art & Military Sci., Air Univ., 2006
Certification Instructor	USAF TPS Class 00A – ETP

Deputy Director, Curriculum Standards Division – CDR (s) Michael M. Hsu (USN)

Test Pilot Instructor	B.S. SE, US Naval Academy, 1993
TPS Aircraft: T-38/F-16	M.A. Physics, Cambridge University, 1995
	US Navy TPS, Class 121, June 2002 - ETP

Chief, Curriculum Development Branch – Maj Michael D. Presnar

Instructor FTE	B.S. EE, B.S. Chem. Eng., Michigan Tech, 1995
TPS Aircraft: C-12/F-16/T-38	M.S. EE, M.S. Applied Math, AFIT, 2000
Control Room Instructor	USAF TPS Class 04A - FTE

**Operations Division (DO) Faculty**

**Responsible for AN 500/CF 500 Prerequisite Courses and QE 900 Graduate Course**

Director of Operations (Acting) – Lt Col William E. Peris

Test Pilot Instructor TPS Aircraft: F-16	B.S. AE, USAFA, 1991 M.S. International Relations, Troy State University, 2002 M.S. Operating Analysis, AFIT, 2006 USAF TPS Class 02A– ETP
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Operations Division Instructor – Mr. Karl B. Major (civ.)

Test Pilot Instructor TPS Aircraft: C-12	B.S. AME, Oklahoma State University, 1982 M.S. ME, CSU-Fresno, 1993 USAF TPS Class 90A – ETP
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Chief of Training, Operations Division – Mr. Brett Vance (civ.)

Test Pilot Instructor TPS Aircraft: T-38	B.S. Organizational Theory and Behavior, USAFA, 1978 M.S. Aero Sciences, Embry-Riddle Aero University, 1985 USAF TPS Class 88B – ETP
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Chief T-38 Pilot - Mr. John (Jay) I. Dunham (civ.)

Test Pilot Instructor TPS Aircraft: T-38	B.S. Eng. Mechanics, USAFA, 1983 M.A. Management, Regent University, 1998
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Chief of Operations Scheduling, Operations Division – Maj Jason A. Eckberg

Instructor FTN (EWO) Control Room Instructor TPS Aircraft: T-38/C-12/P-3	B.S. Chemistry, Carnegie Mellon University, 1997 M.S. Human Resources Mgmt., Central MI Univ, 2007 USAF TPS Class 05B - FTN
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Chief, Qualitative Evaluation Branch, Operations Division – Maj Chad E. Ryther

Instructor FTE TPS Aircraft: Gliders/T-38	B.S. AE, USAFA, 1997 M.S. ME, Georgia Institute of Tech, 2005
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**Education Division (ED) Faculty**

Director, Education Division – Lt Col Adam MacDonald

Test Pilot Instructor	B.S. EE, University of Massachusetts, 1988
TPS Aircraft: F-16/T-38	M.S. EE, AFIT, 1997
	Ph.D. EE, AFIT, 2006
	USAF TPS Class 98A - ETP

Deputy Director, Education Division – Lt Col Brian A. Kish

Instructor FTE	B.S. AE, Illinois Institute of Technology, 1991
TPS Aircraft: C-12/T-38/ HU-16/P-3/Gliders	M.S. AE, AFIT, 1994
Control Room Instructor	Ph.D. AE, AFIT, 2005
	USAF TPS Class 96B – FTE

**Flying Qualities Branch (EDF) Faculty**

**Responsible for FQ 600/700/800/900 Graduate Courses**

Chief, Flying Qualities Branch – Maj Clifton G. Janney

Test Pilot Instructor	B.S. ME, Oklahoma State University, 1992
TPS Aircraft: C-12/KC-135	M.S. ME, AFIT, 2006
	USAF TPS Class 02A – ETP

Master Instructor, Flying Qualities Branch – Mr. David L. Vanhoy (civ.)

Instructor FTE	B.S. AE, Georgia Tech, 1986
TPS Aircraft: C-12/T-38	M.S. AE, University of Maryland, 1988
Control Room Instructor	USAF TPS Class 94A - FTE

Flying Qualities Instructor – Mr. William R. Gray III (civ.)

Test Pilot Instructor	B.S. Physics, USAFA, 1983
TPS Aircraft: F-16/T-38	M.S. ME, CSU-Fresno, 1997
FQ Simulator Instructor	USAF TPS Class 91B – ETP

Flying Qualities Instructor – Mr. Michael K. Nelson (civ.)

Flight Control System Instructor	B.S. AE, CSU-Pomona, 1977
TPS Aircraft: LJ-24	M.S. ME, CSU-Fresno, 1981
FQ Simulator Instructor	

**Performance Branch (EDP) Faculty**

**Responsible for PF 600/700/800 Graduate Courses**

Chief, Performance Branch – Maj Achilles Sakis

Instructor FTE	B.S. AE, Polytechnic Inst of New York, 1985
TPS Aircraft: F-16/T-38/ C-12/HU-16	M.S. AS, Embry Riddle Aeronautical University, 1997
Control Room Instructor	USAF TPS Class 01A - FTE

Master Instructor, Performance Branch – Mr. Russell Erb (civ.)

Instructor FTE	B.S. AE, USAFA, 1983
TPS Aircraft: Gliders/C-12/ C-172/HU-16	M.S. AE, Texas A&M, 1985
Control Room Instructor	USAF TPS Class 89B – FTE

**Systems Branch (EDS) Faculty**

**Responsible for SY 600/700/800 Graduate Courses**

Chief, Systems Branch – Maj Michael S. Starr

Test Pilot Instructor	B.S. EE, USAFA, 1996
TPS Aircraft: T-38/F-16	M.S. EE, AFIT, 2006
	USAF TPS Class 05A - ETP

Master Instructor, Systems Branch – Mr. Kenneth L. Jennings (civ.)

Instructor FTE	B.S. ME, Cal Poly, 1984
TPS Aircraft: P-3	
EO Lab/Radar Lab/IFAST Sim Instructor	

Systems Branch Instructor – Mr. Brian Martinez (civ.)

Instructor FTE	B.S. AE, Cal Poly, 1980
TPS Aircraft: P-3	
EO Lab/Radar Lab/IFAST Sim Instructor	

Chief F-16 Pilot – Mr. Vincent Caterina (civ.)

Test Pilot Instructor	B.S. Geophysics & Planetary Science, Cal Tech
TPS Aircraft: F-16/VISTA	M.S. ME, CSU-Fresno
	USAF TPS Class 90A – ETP

**Test Management Branch (EDT) Faculty**

**Responsible for TM 600/900 Graduate Courses**

Chief, Test Management Branch – Vacant

Master Instructor, Test Management Branch – Mr. Gary L. Aldrich (contr.)

Instructor FTE	B.S. AE, Syracuse University, 1973
TPS Aircraft: Gliders/C-12	M.S. Aviation Management, Central MO State, 1977
C-172/HU-16	USAF TPS Class 82A – FTE
Control Room Instructor	

Test Management Instructor – Ms. Tammy L. Smeeks (contr.)

Instructor FTE	B.S. AE, Parks College of St. Louis University, 1984
Short Course Instructor	M.S. AE, University of Dayton, 1987
	USAF TPS Class 89A – FTE

**Special Projects Division (SP) Faculty**

Director, Special Projects Division – Lt Col Mark R. Schaible

Test Pilot Instructor	B.S. Computational Math, Michigan State, 1986
TPS Aircraft: Gliders	M.S. Business Admin, Central MI University, 1992
	M.A. Operational Art & Military Sci., Air Univ., 2002
	USAF TPS Class 95A - ETP

**Technical Support Division (TS) Faculty**

Chief, Technical Support Division – Lt Col Addison P. Tower

Test Pilot Instructor	B.S. Comp Sci, University of Wisconsin-Madison, 1988
TPS Aircraft: C-12	M.A. Military Art and Science, Air Univ., 2003
	USAF TPS Class 99B - ETP

Operations/Design Engineer and Modification Program Manager – Mr. Dan A. Carroll (contr.)

Test Instrumentation Instructor	B.S. Business, Univ. of Phoenix, 1992
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**Plans & Programs Division (XP) Faculty**

Director, Plans and Programs Division – Lt Col Michael J. Shepherd

Instructor FTN (WSO)  
TPS Aircraft: T-38/P-3  
Control Room Instructor

B.S. Engineering Sciences, USAFA, 1990  
M.S. AA, University of Washington, 1997  
Ph.D. AE, AFIT, 2006  
USAF TPS Class 99A - FTN

**Calspan Corporation Faculty**

Chief Pilot, Calspan Corporation – Mr. Dana Purifoy (contr.)

Test Pilot Instructor  
TPS Aircraft: F-16/VISTA/LJ-24

B.S. AE, University of Michigan, 1977  
M.S. AE, University of Michigan, 1978  
EPNER (French TPS) 1987 - ETP

Chief Test Pilot – Mr. Kevin E. Prosser (contr.)

Test Pilot Instructor  
TPS Aircraft: F-16/VISTA/LJ-24

B.S. EE, University of Connecticut, 1984  
M.S. Aero Science, Embry-Riddle Aero University, 1999  
USAF TPS Class 95B – ETP



**USAF Reservist (Individual Mobilization Augmentee) Adjunct Faculty**

Senior IMA –Lt Col Roger J. Tanner (USAFR)

Test Pilot Instructor	B.S. AAE, University of Illinois, 1982
TPS Aircraft: T-38/F-16/Gliders	M.S. AAE, University of Illinois, 1984
	USAF TPS Class 95A - ETP

Flying Qualities Branch Instructor – Maj Mitchell B. Clapp (USAFR)

Instructor FTE	B.S. AE, B.S. Physics, MIT, 1984
Unaugmented Trim & Stability	B.S. Russian, MIT/Harvard, 1984
Instructor	M.S. AE, MIT, 1984
	USAF TPS Class 88A - FTE

Systems Branch Instructor – Lt Col Larry DiSalvi (USAFR)

Electronic Warfare Instructor	B.S. ME, Georgia Institute of Technology, 1988
	M.S. Industrial Eng., Texas A&M, 1995

Operations Division Instructor – Maj Paul A. Meyer (USAFR)

Test Pilot Instructor	B.S. Social Sciences, USAFA, 1988
TPS Aircraft: T-38	MBA, University of Redlands, 1995

Assistant Technical Support Director – Maj Brian Mork (USAFR)

Comm/Datalink Instructor	B.S. Chemistry, Hope College, 1983
	Ph.D. Analytical Chemistry and Instrumentation, University of Illinois, 1988

Systems Branch Instructor – Maj Glenn G. Watson (USAFR)

Instructor FTN	B.S. Mathematics, Southwestern University, 1987
Comm/Data-Link Instructor	

Performance Branch Instructor – Maj Bruce J. Wilder (USAFR)

Instructor FTE	B.S. AE, Embry-Riddle Aero University, 1991
Control Room Instructor	M.S. AE, University of Colorado, 1999
	USAF TPS Class 03B - FTE

**Other Adjunct Faculty**

Assistant Professor, USAFA – Lt Col Russell G. Adलगren

Compressible Aero Instructor      B.S. AE, Embry-Riddle, 1989  
M.S. Engineering Mechanics, Univ of FL, 1994  
Ph.D. ME/AE, Rutgers Univ., 2002

B-1/B-2/B-52 Test Conductor, 419<sup>th</sup> Flight Test Squadron – Dr. Michael B. Brooks (civ.)

Instructor FTE      B.S. Chemistry, University of CA, 1980  
M.S. Material Sci & Eng., Stanford Univ., 1985  
Ph.D. Material Sci & Eng., Stanford Univ., 1992  
USAF TPS Class 06A – FTE

Director, Modeling and Simulation Research Center, USAFA – Dr. Keith Bergeron (civ.)

Modeling & Simulation Instructor      B.S. Physics USAFA, 1983  
M.S. Mathematics, University of New Mexico, 1987  
Ph.D. Mathematics, University of New Mexico, 1993

Professor, California Polytechnical State University – Dr. Daniel J. Biezad (civ.)

Integrated Nav Systems Instructor      B.S. EE, Illinois Institute of Technology, 1966  
M.S. AE, AFIT, 1972  
Ph.D. AEE, Purdue University, 1984

Navigation & Guidance Technical Expert, 412<sup>th</sup> Test Wing – Mr. Michael E. Bonner

Integrated Nav Systems Instructor      B.S. EE, Northern AZ University, 1988  
M.S. EE, CSU-Fresno, 1994

Assistant Professor, USAFA – Lt Col Keith M. Boyer

Propulsion Instructor      A.A. Avionics Systems Technology, CCAF, 1983  
B.S. AE, University of Florida, 1987  
M.S. AE, AFIT, 1992  
Ph.D. ME, Virginia Tech, 2001

Associate Professor, USAFA – Dr. Steven A. Brandt (civ.)

Energy Concepts Instructor      B.S. AE, Iowa State University, 1975  
M.S. AE, Iowa State University, 1976  
Ph.D. AAE, University of Illinois at UC, 1998

Lead, Communications/Navigation/Identification, F-35 Joint Strike Fighter ITF – Steven R. Brown

Comm/Data Link Instructor      M.S. EE; M.S. Mathematics

Professor, USAFA – Dr. Robert M. Cummings (civ.)

Aerodynamics Instructor	B.S. AE, Cal Poly, 1977 B.A. Music, Cal Poly, 1999 M.S. AE, Cal Poly, 1985 Engineer in AE, USC, 1982 Ph.D. AE, USC, 1988
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Engineering Psychologist, 418<sup>th</sup> Flight Test Squadron – Ms. Patricia A. Dunavold (civ.)

Human Factors Instructor	A.A. Social Sci, Cerro Coso Comm. College, 1992 B.A. Gen Psychology, Chapman University, 1994 M.A., Experimental Psychology, CSU-Northridge, 2004
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Research/Test Pilot, Calspan Corp. – Mr. Russell Easter (contr.)

Test Pilot Instructor	B.S., USAF Academy, 1962
Variable Stability Instructor	M.S., AFIT, 1972
TPS Aircraft: LJ-24	USAF TPS Class 72B – ETP USAF Fighter Weapons School, 1968

Assistant Professor, USAFA – Lt Col Carl A. Hawkins

Aerodynamics Instructor	B.S. Engineering Sciences, USAFA, 1979 M.S. Aeronautics/Astronautics, MIT, 1985 M.S. Management, Golden Gate University, 1991
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Technical Advisor, 412<sup>th</sup> Electronic Warfare Group – Lt Col Gregory T. Hutto (USAFR)

Design of Experiments Instructor	B.S. Operational Analysis, US Naval Academy M.S. Operations Research, Stanford University
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Chief, 95<sup>th</sup> Communications Group Computer Science Branch – Dr. William Kitto (civ.)

Design of Experiments Instructor	B.A. Mathematics, University of CO, 1969 Ph.D. Mathematics, University of Washington, 1973
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Weapons Integration Technical Expert , 412<sup>th</sup> Test Wing – Mr. Steven J. Martin (civ.)

Weapons Integration Instructor	B.S. AAE, University of Illinois M.S. ME, CSU-Fresno, 1993 M.S. Indus. Eng., Georgia Institute of Tech, 2001
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Director, Aeronautics Research Center, USAF Academy – Dr. Thomas E. McLaughlin (civ.)

Aerodynamics Instructor	B.S. EE, University of Nebraska, 1982 M.S. EE, AFIT, 1986 Ph.D. AE Science, University of Colorado, 1992
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Director, 412<sup>th</sup> Test Wing Hypersonic Flight Test Team – Lt Col Daniel R. Millman

Test Pilot Instructor	B.S. ME, Rice University, 1986
Aerodynamics Instructor	M.S. AE, George Washington University, 1989
TPS Aircraft: C-12	Ph.D. AE, AFIT, 2004 USAF TPS Class 98A – ETP

Assistant Professor, USAFA – Dr. Martiqua Post (civ.)

Intro to Aerodynamics Instructor	B.S. ME, Union College, 1999 M.S. ME, University of Notre Dame, 2001 Ph.D. AE & ME, University of Notre Dame, 2004
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Chief, Global Hawk Flight Test, Northrop Grumman Corp. – Mr. James M. Payne (civ.)

Test Pilot Instructor	B.S. General Engineering, USAFA, 1974
TPS Aircraft: Gliders	M.S. AE, AFIT, 1982
Unaugmented Trim and Stability Instructor	USAF TPS Class 82B – ETP

Chief of Laboratory Operations, Aeronautics Laboratory, USAFA – Dr. Timothy M. Scully (civ.)

Modeling and Sim Instructor	B.S. EE, University of Colorado, 1985 M.S. EE, University of Dayton, 1990 Ph.D. Computer Science, CO Tech University, 1998
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Chief Human-System Integration Engineer – Mr. John J. Spravka (civ.)

Human Factors Instructor	B.S. Psychology, University of Dayton, 1979 M.S. Experimental/Cognitive Psychology, University of Dayton, 1984
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Handling Qualities Consultant , 418<sup>th</sup> Flight Test Squadron – Mr. Thomas Twisdale (contr.)

Aircraft Handling Qualities Simulator & Course Development	B.S. AE, Virginia Polytech Institute, 1968
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## **USAF TPS Support Staff**

### **Commandant's Support Staff (CSS)**

Chief, Student Services – Ms. Annamaria Taylor (civ.)  
Executive Officer – 1Lt David B. Simmons  
Personnel – SSgt Michelle Heagney  
Administrative Assistant – Mr. Albert Valdez (civ.)  
NCOIC – SSgt LaShawnda N. Wash  
Administrative Assistant – Ms. Julie A. Word (civ.)

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Editorial/Training Manager – Ms. Dorothy Meyer (civ.)

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Production Superintendent – TSgt Michael S. Fountain  
Scheduler (DOS) – Mr. Jody M. Groves (contr.)  
Superintendent, Aviation Resource Management – MSgt Hector Hernandez  
Aircrew Training Manager (DOT) – Ms. Rebecca Pillado (civ.)  
Scheduler (DOS) – Ms. Carolyn J. Rogers (contr.)  
NCOIC, Aviation Resource Management – SSgt Jamie L. Turner

### **Education Division (ED) Staff**

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Short Courses (EDZ) – 1Lt Mason J. Hubbard  
Test Management Course Assistant – Capt Jamila D. Patterson (USAFR)  
Short Courses (EDZ) – 2Lt Joseph P. Samek

### **Technical Support Division (TS) Staff**

Instrumentation Engineer (TSF) – Mr. Lionel Banuelos (contr.)  
Superintendent (TS) – MSgt Laureano P. Belen  
Consultant (TSX) – Mr. Christopher M. Cullum (contr.)  
Chief, Airborne Instrumentation Branch (TSF) – 1Lt Jeffrey S. Dillard  
Telemetry Engineer (TSF) – Mr. Rafael Garcia (contr.)  
Instrumentation Specialist (TSF) – Mr. John R. Glass (civ.)  
Deputy Chief, Airborne Instrumentation Branch (TSF) – 2Lt David M. Ho  
Chief, Software/Simulation Branch (TSX) – 1Lt Miguel A. Isasmendi  
Instrumentation Specialist (TSF) – Mr. Steven L. Knudsen (civ.)  
Consultant (TSX) – Mr. Steven Nastally (contr.)  
Deputy Chief, Computer Systems Branch (TSP) – 2Lt Benhur E. Pacer, Jr.  
Electrical Technician (TSF) – Mr. Patrick A. Ramson (civ.)  
Chief, Computer Systems Branch (TSP) – Capt Edward L. Salsgiver, Jr.  
Special Instrumentation Lead (TSF) – Mr. Richard Schuette (civ.)  
Instrumentation Technical Assistant (TSF) – Ms. Sally Winter (contr.)

**Plans & Programs Division (XP) Staff**

Supply Clerk – Ms. Brittany C. Biscoe (contr.)  
Supply Clerk – Mr. Ryan Bowser (contr.)  
Chief, Resource Management Branch (XPR) – Ms. Jeanne D. Gare (civ.)  
Chief, Program Control Branch (XPP) – Ms. Sharlene A. Lim (civ.)  
Contracting Officer (412 TW/PK) – Mr. Ty T. Okuhara (civ.)  
Program Control Analyst (XPP) – Ms. Cynthia Roell (civ.)  
Budget Analyst (XPR) – Ms. Melinda S. Shastid (civ.)  
Chief, Supply (XPP) – Ms. Mabel Wilson (civ.)

**Calspan Corporation Staff**

Technician – Mr. Adam L. Hartz (contr.)  
Crew Chief – Mr. Andrew A. Kappas (contr.)  
Site Manager – Mr. Jason L. Kirkpatrick (contr.)  
Technician – Mr. Andre D. Layson (contr.)  
Property Administrator – Mr. Todd N. Tobin (contr.)  
Crew Chief – Mr. Berne L. Woolley (contr.)



## Course Descriptions

### AN 500 – Ancillary Training – 0 Semester Credit Hours

This training is set up mainly for the first week of classes. There are other monthly and quarterly events that are also on this list. Students typically will complete the following ancillary training events during the program:

ACQ/SYS/TST 101, CLE 011, SYS 202 (Part I)	Math Exam
Math Exam Turn-In/Review	Operational Risk Management Training
Flight Safety Meeting	CC Call
Initial Crew Resource Management (CRM)	Heritage Speaker
TPS In-brief, Passports, & Student Issues	Disaster Prep
Fire Prevention Brief/Extinguisher Training	Base OPSEC Brief
Unit OPSEC Training	Unit Security Brief
Drug/Alcohol Brief	Suicide Prevention Brief
Sexual Assault and Violence Awareness Brief	Traffic Safety Brief
Self Aid and Buddy Care Training	Government Credit Card
Information Assurance Training	Anti-Terrorism Training
Law of Armed Conflict Training	Ethics Training
Homosexual Policy Awareness Training	TPS Introduction & Welcome (Orientation Day)
Ground Safety	Flight Safety Introduction
Aircrew Ops Process Brief	Local Area Orientation Brief
SFTE Briefing	SETP Briefing
Curriculum Field Trip Brief	Comprehensive Exams Brief
APDP Brief	United Airlines (UAL) Field Trip Brief
Field Trip (US Only) Brief	Academics Debrief
Operations Officer Debrief	Commandant Debrief
Graduation Brief	

**CF 500 – Check Flights – 0 Semester Credit Hours**

This is a Check Flight Prerequisite Course to ensure all pilots coming to the USAF TPS are checked out in the curriculum aircraft. These check rides will also familiarize FTPs and FTEs with data gathering and chase techniques. This course also gives FTEs a background in flying aircraft.

**CF 521-3/561-3 – C-12/F-16/T-38 5-Flight Evaluation**

**CF 524/564 – C-172 FTE Airmanship and Flights 1-5**

**CF 525/565 – T-38 Cockpit Procedures Training and Check Flights 1-4**

**CF 526/566 – F-16 Cockpit Procedures Training and Check Flights 1-4**

**CF 527/567 – C-12 Cockpit Procedures Training and Check Flights 1-3**

**CF 528/568 – T-38 Cockpit Familiarization and Data Aircraft Familiarization**

**CF 529/569 – F-16 Cockpit Familiarization and Data Aircraft Familiarization**

**CF 530/570 – C-12 Cockpit Familiarization and Data Aircraft Familiarization**

**CF 531/571 – AT-38B Basic Weapons Familiarization FTT**

**CF 532/572 – T-38 vs. T-38 Photo/Safety Chase Intro and Fam FTT**

**CF 533/573-4 – F-16 vs. T-38 Photo/Safety Chase FTT**

**CF 535/575 – T-38 Target Qualification**

**CF 536/576 – C-12 Target and Chase Demo**

**CF 537/577 – T-38 Low Level Familiarization FTT**



**PF 600 – Fixed-Wing Aerodynamics –**  
**3 Semester Credit Hours**

This course contains academic theory lectures for Introduction to Aerodynamics, Compressible Aerodynamics, and Cruise. This theory is the basis of flight and aerodynamics for fixed-wing aircraft. The Flight Test Techniques included in this course are: Mission Director, Aerodynamic Modeling, Cruise Data, Fighter Performance Checkride, High Lift over Drag (L/D), and Low L/D.



**PF 601 - PF-600/700/800 Introduction Brief**

Basic overview of performance flight-testing and the performance phase curriculum.

**PF 602-605 – Introduction to Aerodynamics**

Subsonic aerodynamic fundamentals, equations and terminology used throughout the USAF TPS curriculum; airfoil analysis, forces acting on the aircraft, pressure gradients and the Bernoulli equation, and drag coefficients; boundary layer separation and control; Mach and Reynolds numbers and pitching moments.

**PF 606-609 – Compressible Aerodynamics**

Compressible flow from transonic to hypersonic; shock waves; boundary layer control over supersonic wings; airfoil shapes, shapes of aircraft structures, and transitions from subsonic to supersonic flight; lift and drag approximations for supersonic airfoil sections; principles of hypersonic aerodynamics and aerothermodynamics and their effect on aerospace vehicles.

**PF 610-611 – Cruise**

Theoretical background required to determine aircraft cruise performance; data reduction methods oriented toward providing cruise data in the format used at the AFFTC; definition of the basic cruise assumption of level unaccelerated flight; development of lift and drag functional relationships based on subsonic aerodynamics in a form suitable for cruise performance analysis; determination of thrust and fuel flow parameters; derivation of the equations for range and endurance; determination of optimum fuel flows and RPM settings for cruise; conversion of data to standard day conditions; techniques used in analyzing variable geometry and dual rotor engine cruise performance.

**PF 620 - C-12 DAS Planeside Academics (Data Group only)**

**PF 621 - T-38 DAS Planeside Academics (T-38 and C-12 Data Groups only)**

**PF 622 - F-16 DAS Planeside Academics (F-16 Data Group only)**

**PF 623-624 - Mission Director FTT**

This FTT gives students information on mission director techniques, crew coordination, and in flight data collection. It also highlights mission events for C-12 flight that introduces students to directing and being directed during a test mission.

**PF 625-626 - Aerodynamic Modeling FTT**

Test methods used to collect lift and drag data; stabilized and dynamic flight maneuvers.

**PF 627-628 - Cruise Data FTT**

Techniques for determining the cruise performance of aircraft; conversion of data to standard day; comparison of data to contractor predicted flight manual aircraft performance for optimum range and endurance.

**PF 629-630 - Fighter Performance Checkride FTT**

Mission events and grading criteria for pilot check ride in a fighter.

**PF 631-632 - Glider High L/D FTT**

Unique aspects of high L/D flight; normal and emergency procedures for glider operations; requirements for pilot solo flight.

**PF 633-634 - Low L/D FTT**

Theory of low L/D flight; discussion of lifting body and shuttle type approaches to landing phases; safety considerations.

**PF 663 – Mission Director Demo**

**PF 665 – T-38 Aerodynamic Modeling Demo**

Demonstrate and practice the test methods used to collect lift and drag data at constant Mach numbers through stabilized and dynamic flight maneuvers.

Aircraft: T-38

**PF 666 – Aerodynamic Modeling Data**

Practice the test methods used to collect lift and drag data at constant Mach numbers through stabilized and dynamic flight maneuvers; gather data for final limited performance report using data group aircraft.

**PF 667 – Cruise Data**

Use the level cruise method for determining the cruise performance of data group aircraft.

**PF 669 – T-38/F-16 Fighter Performance Check Ride Practice**

Practice planning an efficient and safe test sortie, performing the appropriate FTTs correctly, and determining the quality of data. Note: C-12/T-38 data groups will use T-38; F-16 data group will use F-16.

**PF 670 – F-16/T-38 Fighter Performance Check Ride**

Demonstrate the student can plan an efficient and safe test sortie, perform the appropriate FTTs correctly, and determine the quality of data. Note: C-12/T-38 data groups will use F-16; F-16 data group will use T-38.

**PF 671 – Glider High L/D Demo**

Familiarize all students with high L/D; expand their understanding of un-powered flight; solo pilots using Schweizer 2-33, 1-26, or Blanik L-23

**PF 673 – T-38 Low L/D Demo**

Qualitatively investigate low L/D flight including Shuttle approaches.

**PF 681 – Performance Test Plan Brief**

Test plan requirements for the performance phase test project accomplished in data group aircraft (C-12, T-38 or F-16).

**PF 682 – Model Validation Report Brief**

Requirements for the model validation report; grading criteria.

**PF 683 - Model Validation TLR Authoring**

Document each performance data group's test results.

**PF 684 - Model Validation Report Debrief**

Feedback to students on their model validation report.

**PF 690 - Group Debrief of Fighter Performance Check ride**

Trends in class check ride performance.



**PF 700 – Performance Data Standardization – 3 Semester  
Credit Hours**

This group of courses consists of Pitot-Statics, Modeling and Simulation, and Propulsion. These courses are the basis of atmosphere measuring devices on aircraft and different thrust generating devices for aircraft. The Flight Test Techniques for this group of courses consists of: Tower Fly-by, Pacer/GPS, and the Propulsion Demonstration.



**PF 701-703 – Pitot-Statics**

Properties of the earth's atmosphere applicable to flight testing; definition of the U.S. Standard Atmosphere and its assumptions; pitot-static instrumentation; all inputs, outputs and limitations associated with pitot-static systems including the procedures for error computation and correction and conversion of test readings to U.S. Standard Day calibrations; use of computer programs, reduction of test data from tower fly-bys, pacer and radar measurements to determine the position errors inherent in aircraft on-board pitot-static systems.

**PF 705-709 – Modeling and Simulation**

**PF 711-713 – Propulsion**

Examination of the four basic types of engines; cycle analysis and engine efficiency with a description breakdown of engine components for all types of gas turbine engines; analysis of thrust augmentation; explanation and analysis of engine operational characteristics related to propulsion systems testing incorporating equations and theories.

**PF 721 – Tower Fly-by FTT**

Tower fly-by flight test techniques used to test, evaluate and calibrate aircraft pitot-static systems.

**PF 723 – Pacer/GPS FTT**

Pace and GPS flight-test techniques used to test, evaluate and calibrate aircraft pitot-static systems.

**PF 725 – Propulsion Demonstration FTT**

Various test methods for obtaining specific engine test data for validation of thrust models, engine transients, and air start performance, and comparison with ground test data.

**PF 761 – Tower Fly-by Demonstration and Data**

Demonstrate and practice tower fly-by flight test techniques used to test, evaluate and calibrate aircraft pitot-static systems. Allow a student to demonstrate the ability to plan and perform a mission in an unfamiliar aircraft and environment.

**PF 763 – Pacer/GPS Data**

Practice pace and GPS flight-test techniques used to test, evaluate and calibrate aircraft pitot-static systems.

Aircraft: Data group aircraft

**PF 764 – Pacer/GPS Data Lead (Optional)**

Observe pace/GPS operations; practice taking data as lead.

Aircraft: Calibrated F-16B

**PF 765 – Propulsion Demonstration (Pilot)**

Demonstrate various test methods for obtaining specific engine test data for validation of thrust models, engine transients, and air start performance, and comparison with ground test data.

Aircraft: F-16B

**PF 766 – Propulsion Demonstration (Engineer/Navigator)**

Demonstrate use of control room for observing data quality of propulsion FTTs

**PF 781 – Air Data System Calibration Report Brief**

Requirements for the air data systems calibration report; grading criteria.

**PF 782 – Air Data System Calibration TLR Authoring**

Document the pitot static system of the data group’s data aircraft; practice report writing skills.

**PF 783 – Air Data System Calibration Report Debriefing**

Feedback to students on their ADSC report.



**PF 800 – Performance Optimization– 3 Semester Credit Hours**

This group of courses consists of Takeoff and Landing and Energy. These courses demonstrate the equations needed for normal flight and departure from flight. The Flight Test Techniques for this group of courses consists of: Takeoff and Landing, C-12 Level Accelerated /Turn, Level Accelerated /Saw tooth Climb, and Turn. Also the Performance Final Check ride is within this set of courses.



**P 801 – Takeoff and Landing**

Equations that can be used to determine takeoff performance and to correct flight test data to standard conditions; equations to analyze ground roll and speed on landing, braking distances and the effects of reverse thrust, aerodynamic braking and runway surface conditions on landing; effects of atmospheric influences and variations in pilot technique at varying gross weights under various conditions; discussion of a variety of typical takeoff and landing tests accomplished at AFFTC; braking, anti skid and barrier testing.

**PF 803-805 – Energy**

Relationships of various forces acting on an aircraft in flight; the simplification of equations for steady climb and descent; factors that affect optimum angle of climb, maximum rate of climb and time to climb; analysis of polar diagrams for energy management; analysis of the forces acting on an aircraft in a turn; factors affecting turn performance; computation of corrections to standard day; methods of testing turn performance for non-standard day atmospheric and non-standard weight conditions; derivation and explanation of the equations used to correct check climb, level acceleration, and turn performance data.

**PF 820 – Takeoff and Landing FTT**

Test techniques for performing takeoff and landing tests and gathering data for takeoff and landing ground roll distances; development of a method for reducing these data to standard day conditions; safety considerations that apply

**PF 822 – C-12 Level Accelerated /Turn FTT**

Test methods used to determine an aircraft's climb, acceleration, turn, and descent performance.

**PF 824 – Level Accelerated/Saw tooth Climb FTT**

Test methods used to gather specific excess power data.

**PF 827 – Turn FTT**

Techniques used to gather turn performance data.

**PF 830 – C-12 Performance Final Demonstration**

Mission events for flight demonstration of all previously discussed performance flight test techniques in the C-12 aircraft; mission preparation, briefing, performance flight test technique practice, mission direction practice, and debriefing; demonstration of the low-altitude speed course FTT for air data system calibration.

**PF 832 – Performance Final Check Ride**

Mission events and grading criteria for the pilot and FTE/N student check ride in the HU-16.

**PF 862 – Level Accelerated / Turn Performance Demonstration**

Demonstrate and practice directing a mission, test methods used to determine an aircraft's climb, acceleration, turn, and descent performance.

Aircraft: C-12

**PF 864 – Level Accelerated / Saw tooth Climb Demonstration**

Demonstrate and practice test methods used to gather specific excess power data.

Aircraft: T-38

**PF 865 - Level Accelerated / Saw tooth Climb Practice**

Practice test methods used to gather specific excess power data.

Aircraft: Data group aircraft

**PF 855 – Level Accelerated / Saw tooth Climb Data**

Collect data for maneuver and final limited performance reports using test methods for gathering specific excess power data.

Aircraft: Data group aircraft

**PF 867 – Turn Performance Demonstration**

Demonstrate and practice techniques used to gather turn performance data.

Aircraft: F-16B/D

**PF 868 – Turn Performance Practice**

Practice turn performance flight test techniques.

Aircraft: Data group aircraft

**PF 869 – Turn Performance Data**

Collect turn performance data for maneuver and final limited performance reports.

Aircraft: Data group aircraft

**PF 870 – Performance Final Demonstration**

Practice techniques for evaluating multi-engine aircraft performance and test team coordination, data collection, and evaluation techniques.

Aircraft: C-12

**PF 872 – Performance Final Multi-Engine Check ride**

Evaluate each student's ability to operate as an effective test team member during an airborne test.

Aircraft: HU-16

**PF 883 - Performance Oral Report-PRR**

Document each performance data group's test results.

**PF 884 - Performance Oral Report-PRR Debrief**

Feedback to students on their performance final report.

**PF 892 – Performance Final Check ride Report Authoring**

Demonstrate knowledge of performance FTTs by reporting on the performance final in the HU-16.

## **FQ 600 – Unaugmented Airplane Motion – 4 Semester Credit Hours**

This group of courses consists of Unaugmented Equations of Motion and Trim and Stability. These courses demonstrate the basic overview of flying qualities flight testing and the flying qualities phase curriculum. The Flight Test Techniques for this group of courses consists of: C-12 Long-Stab/Man-Flt (LS/MF) Demonstration FTT, LJ-24 VSS Introduction and Long Demonstration FTT, C-12 Lat Dir Demonstration FTT, LJ-24 VSS Lat/Dir Demonstration FTT, and T-38 Dynamics FTT.



### **FQ 602-605 Unaugmented Equations of Motion**

Six equations of motion that govern an airplane's motion; assumptions used to simplify the equations into several useful forms; concepts of static and dynamic stability, different airplane coordinate systems, stability, derivatives, kinematic and inertial coupling, airplane transfer functions and the five classical characteristics of motion; stability contributions from aircraft design parameters and power plant installation; flight restrictions to cg travel; transonic and supersonic effects on flying qualities.

### **FQ 606-609 Trim and Stability**

Fundamentals of stability and control; requirements for trim; requirements for longitudinal, lateral, and directional stability; tradeoffs between stability and control; introduction to roll coupling and failure states; longitudinal static stability, flight path stability, maneuvering flight, and lateral-directional flight test techniques, data reduction, and MIL-HDBK-1797 requirements. Classic dynamic modes of aircraft, mode approximations, requirements and methods for testing dynamic stability including data reduction and MIL-HDBK-1797 requirements.

### **FQ 610-611 Parameter Estimation (pEst)**

Expose students to the mathematical models of airplanes.

### **FQ 621 C-12 Long-Stab/Man-Flt (LS/MF) Demo FTT**

Flight test techniques for testing the longitudinal stability/maneuvering flight characteristics of conventional airplanes.

### **FQ 623 LJ-24 VSS Intro & Long Demo FTT**

Elements of the longitudinal variable stability demonstration in the Calspan LearJet 24.

### **FQ 625 C-12 Lat Dir Demo FTT**

Flight test techniques for testing the lateral/directional stability characteristics of un-augmented flight control systems.

### **FQ 627 LJ-24 VSS Lat/Dir Demo FTT**

Elements of the lateral/directional variable stability demonstration in the Calspan LearJet 24.

### **FQ 629 T-38 Dynamics FTT**

Flight test techniques for testing the dynamic characteristics of augmented and un-augmented flight control systems.

**FQ 661 C-12 LS/MF Demo**

Demonstrate and practice flight test techniques for testing the longitudinal stability/maneuvering flight characteristics of conventional airplanes.

**FQ 663 LJ-24 VSS Long Demo**

Demonstrate longitudinal static and dynamic modes of aircraft in the VSS LearJet 24.

**FQ 664 LJ-24 VSS Demo**

Demonstrate longitudinal and lateral-directional modes of aircraft in the Calspan LearJet 24.

**FQ 665 C-12 Lat/Dir Demo**

Demonstrate and practice flight test techniques for testing the lateral/directional stability characteristics of un-augmented flight control systems.

**FQ 667 LJ-24 VSS Lat/Dir Demo**

Demonstrate lateral-directional static and dynamic modes of aircraft in the VSS LearJet 24.

**FQ 669 T-38 Dynamics Demo**

Demonstrate and practice flight test techniques for testing the dynamic characteristics of augmented and un-augmented flight control systems.

**FQ 671 T-38 Longitudinal Data**

Demonstrate and practice flight test techniques for testing the longitudinal static and dynamic characteristics of augmented and un-augmented flight control systems.

**FQ 673 T-38 Lat/Dir Data**

Demonstrate and practice flight test techniques for testing the lateral/directional static and dynamic characteristics of augmented and un-augmented flight control systems.

**FQ 681 FQ Test Plan Brief**

Flying Qualities Phase Test Plans; what is expected during students' simulated flying qualities testing.

**FQ 691 T-38 Long Data Daily Flight Report Authoring**

Document static and dynamic data flights

**FQ 692 T-38 Long Stat TR Authoring**

Document static and dynamic data flight results

**FQ 693 T-38 Lat/Dir Data Daily Flight Report Authoring**

Document static and dynamic data flights

**FQ 694 T-38 Lat/Dir TR Authoring**

Document static and dynamic data flight results

## **FQ 700 – Flight Control Systems Testing – 4 Semester Credit Hours**

This group of courses consists of Introduction of Flight Control Systems (FCS), Parameter Estimation, Analog Flight Control Systems, Aero/Servo/Elasticity (ASE), Criteria for Flight Control System Design, Frequency Content, Aliasing and Filters, Frequency Response Estimation, Digital Flight Control Systems, Redundancy Management Systems, Flight Control Systems Ground Testing, and Flight Test Simulators. These courses demonstrate the origins and history of flight control systems and control augmentation systems are reviewed. The terminology associated with flight control systems is also reviewed. The Flight Test Techniques for this group of courses consists of: VISTA HQ Demonstration FTT. The Lab Test Techniques for this group of courses consists of: the Flight Control System Project – Ground Test and Flights. The Flying Qualities Simulator is also taught in this set of courses.



### **FQ 701-702 Intro to Flight Control Systems**

The origins and history of flight control systems and control augmentation systems are reviewed. The terminology associated with flight control systems is also reviewed.

### **FQ 703-706 Analog FCS**

The object of flight control system design is discussed, as are the fundamental design methods, and several obstacles that stand between the designer and success. The use of transfer functions, block diagrams, root locus, and frequency response methods are introduced.

### **FQ 707-708 Aero/Servo/Elasticity (ASE)**

Methods for determining and suppressing the interactions of aerodynamics, structures, and flight control systems servo-actuators; structural coupling and rigid body limit cycle.

### **FQ 709-710 Criteria for FCS Design**

Specifications and good practices for flight control system design; role played by handling qualities design criteria.

### **FQ 711-712 Frequency Content, Aliasing & Filters**

Introduction to the frequency content in the elements of a flight control system; effects of sample rate on measurements of frequency; use of anti-aliasing filters; types and uses of filters.

### **FQ 713-714 Frequency Response Estimation**

Methods for estimating the response of a flight control system; use of model validation method.

### **FQ 715-716 Digital FCS**

Differences between analog and digital systems; overview of principle tools of digital flight control system design including pulse transfer functions, z-transforms, w'-transforms, difference equations, and use of root locus and frequency response methods in the w'-plane.

### **FQ 717-718 Redundancy Management Systems**

Requirements for redundant systems; methods for proper system design and operation.

**FQ 719-720 FCS Ground Testing**

Flight control system verification and validation testing are discussed and linked to the model validation test method and the buildup approach to testing. Static gain and frequency response verification testing are described. Structural coupling and rigid body limit cycle oscillation are also described.

**FQ 721-722 Flight Test Simulators**

Value of simulation in support of flight test efforts; types of simulators used in flying qualities design and testing; use of flight test simulators and role of simulator fidelity.

**FQ 731 VISTA HQ Demo FTT - *N/A for 07A***

Demonstration and practice of handling qualities test techniques in a variable stability aircraft; exam effects of differing flight control systems.

**FQ 733 FCS Project FTT**

FTTs used in evaluating the performance of the FCS designed by the students.

**FQ 761 FQ Sim**

Expose students to the flight test techniques used to evaluate aircraft handling qualities during high gain tasks such as air-to-air gunnery or formation flight.

**FQ 762 HQ Eval Sim**

Additional exposure to HQ flight test techniques.

**FQ 771 VISTA HQ Demo - *N/A for 07A***

Demonstration and practice of handling qualities test techniques in a variable stability aircraft; exam effects of differing flight control systems.

**FQ 773-774-775 FCS Project (Steps 1-3)**

Aerodynamic Wind Tunnel Analysis, Analog FCS Design, Digital FCS Design.

**FQ 776 FCS Project Sim/HQ Testing (*Step 4*)**

Evaluation of the performance of the flight control system designed by the students via simulation.

**FQ 777 LJ-24 FCS Project Ground Test (*Step 5*)**

Evaluation of the performance of the flight control system designed by the students via ground test.

**FQ 778 LJ-24 FCS Project Flight Test (*Step 6*)**

Airborne evaluation of the performance of the flight control system designed by the students.

**FQ 779 C-12 FCS Project Target**

Airborne target to support the evaluation of the performance of the FCS designed by the students.

**FQ 782 HQ Eval Sim Debrief**

Feedback on HQ qualities simulator mission.

**FQ 791 VISTA HQ Daily Flight Report Authoring - *N/A for 07A***

Document VISTA HQ demo flights

**FQ 793-798 – FCS Project Report Authoring**

**FQ 800 – Stall/Departure/Spin and Failure State Testing – 4 Semester Credit Hours**

This group of courses consists of Stall, Departure and Spin Testing and Failure State (Engine Out) Testing. These courses demonstrate the qualities and testing of an aircraft departing from normal straight and level flight. The Flight Test Techniques for this group of courses consists of: Glider Spin Demonstration FTT, T-38 Stall Demonstration FTT, T-38 HQ Demonstration FTT, C-12 Engine Out Demonstration/Data FTT, KC-135 Engine Out Demonstration/Data FTT, F-16 Departure Demonstration FTT, F-16 Departure Data FTT, and T-38 Departure Chase FTT.



**FQ 801-804 Stall, Departure, and Spin Testing**

Review of the airplane's equations of motion and aerodynamic and inertial coupling; Military Standard MIL-F-83691B; test techniques for stall/departure/spin evaluation; high AOA test planning; case study of the F-16 and the procedures developed by the F-16 Combined Test Force.

**FQ 805-806 Failure State (Engine Out) Testing**

Principles of failure state testing; use of the model validation test method; build up approach to testing; details of engine out testing including  $V_{mca}$  and  $V_{mcg}$  static testing, transient response testing, and HQ testing.

**FQ 820 Glider Spin Demo FTT**

Procedures and techniques for testing the spin characteristics of airplanes with high lateral inertia; safety considerations; example of TPS glider spin test program (video).

**FQ 822 T-38 Stall Demo FTT**

Procedures and techniques for determining the near stall and stall characteristics of airplanes.

**FQ 824 T-38 HQ Demo FTT**

Procedures and techniques for testing aircraft handling qualities during high gain tasks such as air-to-air gunnery.

**FQ 828 C-12 Engine Out Demo/Data FTT**

Procedures and techniques for testing the engine out characteristics of multi-engine airplanes; special methods for determining the risks and the minimizing procedures used by test teams.

**FQ 830 KC-135 Engine Out Demo/Data FTT**

Procedures and techniques for testing the engine out characteristics of large multi-engine airplanes; special methods for determining the risks and the minimizing procedures used by test teams.

**FQ 832 F-16 Departure Demo FTT**

Elements of the F-16 departure demo ride; techniques for departing and recovering the F-16; reasons for the F-16's high AOA characteristics.

**FQ 835 F-16 Departure Data FTT**

Elements of the F-16 departure data ride; techniques for departing and recovering the F-16; reasons for the F-16's high AOA characteristics.

**FQ 838 T-38 Departure Chase FTT**

Techniques for chasing a dissimilar airplane during a spin test; reasons for the techniques; safety considerations.

**FQ 860 Glider Spin Demo**

Demonstrate and practice procedures and techniques for testing the spin characteristics of airplanes with high lateral inertia.

**FQ 862 T-38 Stall Demo**

Demonstrate and practice procedures and techniques for determining the near stall and stall characteristics of airplanes.

**FQ 864 T-38 HQ Demo**

Demonstrate and practice procedures and techniques for testing aircraft handling qualities during high gain tasks such as air-to-air gunnery.

**FQ 866 T-38 HQ/Stall Data**

Student team practices HQ and stall FTTs; gather data for report.

**FQ 867 T-38 HQ/Stall Data Target**

Perform target mission for T-38 Handling Qualities / Stall Data mission.

**FQ 868 C-12 Engine Out Demo/Data**

Demonstrate and practice procedures and techniques for testing the engine out characteristics of multi-engine airplanes.

**FQ 870 KC-135 Engine Out Demo/Data**

Demonstrate and practice procedures and techniques for testing the engine out characteristics of large multi-engine airplanes.

**FQ 872 F-16 Departure Demo**

Demonstrate and practice techniques for departing and recovering the F-16.

**FQ 873 F-16 Departure Demo Control Room (Test Conductor)**

Practice test conducting during departures; CRM.

**FQ 874 F-16 Departure Demo Control Room (Strip Charts)**

Practice real-time strip chart reading; CRM.

**FQ 875 F-16 Departure Data**

Demonstrate and practice techniques for departing and recovering the F-16.

**FQ 878 T-38 Departure Demo Chase**

Demonstrate and practice techniques for chasing a dissimilar airplane during a spin test.

**FQ 879 T-38 Departure Data Chase**

Demonstrate and practice techniques for chasing a dissimilar airplane during a spin test.

**FQ 884 T-38 HQ/Stall Data Daily Flight Report Authoring**

Document Ops handling/Stall data flights

**FQ 886 T-38 HQ/Stall Oral PRR Presentation**

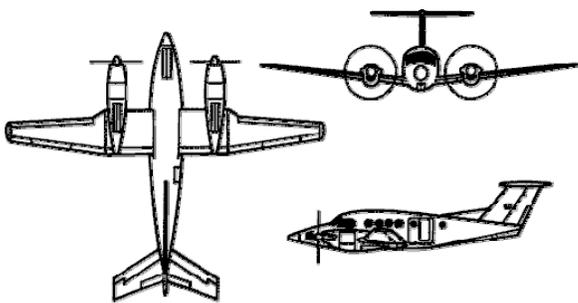
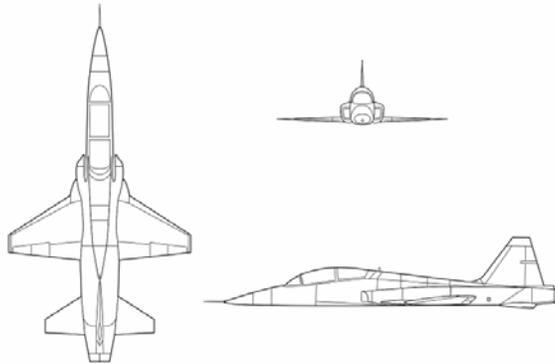
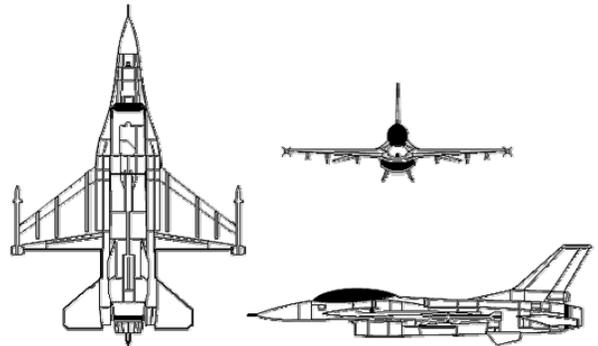
Document results of Ops handling/Stall data flights.

**FQ 888 C-12 or KC-135 Engine Out Expanded 5314 Report Authoring**

Document results of engine out flights.

**FQ 896 F-16 Departure Oral PRR Presentation**

Document the results of a limited fighter spin evaluation.



**FQ 900 – Handling Qualities and Envelope Expansion Testing – 4 Semester Credit Hours**



This group of courses consists of Overview of Flying Qualities Testing, Configurations for Flying Qualities Testing, Taxi Testing, First Flight Flying Qualities Testing, Flying Qualities Envelope Expansion Testing, Handling Qualities Evaluation, One-Flight Evaluations of Flying Qualities, Stores Certifications, and Structures. These courses demonstrate a preview of the types of flying accomplished during a typical test program. The Flight Test Techniques for this group of courses consists of: F-16 LCO FTT, ME Flying Qualities Demonstration FTT, KC-135 Ground School, Glider Flying Qualities Demonstration FTT, C-12 First Flight Checkride FTT, F-16 HQ Demonstration FTT, F-15 CFP/Asymmetric Stores Demonstration FTT, AT-38 CFP Checkride FTT, F-16 Structure FTT.

**FQ 901 Overview of FQ Flight Testing**

Preview of the types of flying accomplished during a typical test program.

**FQ 902-903 Configuration for Flying Qualities Testing**

Importance of programmed test inputs, in-flight variable control systems, data pumps, test instrumentation, and other capabilities; relationship between these capabilities and cost and schedule, flight safety, and data quality.

**FQ 904-905 Taxi Testing**

Requirements and procedures for taxi testing; pneumo-servo-elastic coupling during ground operations; proper build up techniques; predictive methods, test point selection, test methods, data analysis, and safety considerations.

**FQ 906-907 First Flight Flying Qualities Testing**

Preparation for first flight of new or significantly modified airplane; test point and airplane configuration selection; emphasis of need for an up-and-away power approach (PA) HQDT evaluation; low speed envelope exploration for aerodynamic model validation, derivative and frequency response estimation and the evaluation of limit cycle, structural resonance and aero-servo elasticity.

**FQ 908-909 FQ Envelope Expansion Testing**

Aerodynamic model validation testing and aero-servo-elastic flight testing; prediction of airplane response, procedures for the classic build-up techniques for expanding airplane flight envelopes; methods for determining a logical order and step size for build-ups, and data analysis.

**FQ 910-913 Handling Qualities Evaluation**

Major elements and objectives of flying qualities testing; central dilemma of handling qualities, human dynamics, and the effects on specification, design, pilot models and test evaluation; illustration of the advantages of model validation during ground and flight test using real flight test examples, introduction to pilot rating systems including Cooper-Harper Rating System.

**FQ 914-915 One-Flight Evaluation of Flying Qualities**

Methods for planning, flying, and gathering data during a one or two flight aircraft evaluation; methods for safety planning.

### **FQ 916-917 Stores Certification**

Introduction to the Seek Eagle stores certification process by demonstrating captive compatibility and safe separation of expendable stores from aircraft; terminology; certification analysis of stores and carriages to include loading, separation and jettison characteristics on the ground and in the wind tunnel using scaled models; flight testing including weapons delivery, gun and missile firing; case study presents the students with problems of compatibility and the certification process.

### **FQ 918-919 Structures**

Information on the structural composition of aircraft materials; structural responses of aircraft to applied loads and aeroelastic phenomena; structural considerations during testing including load distributions, structural deformations under static and dynamic loads and methods for testing vibration and oscillatory motions of aircraft structures.

### **FQ 920 F-16 LCO FTT**

FTTs used in flutter/limit cycle oscillation (LCO) testing; procedures and techniques for student pilot practice while a student FTE/N controls the flight by monitoring simulated critical parameters via telemetry.

### **FQ 922 ME FQ Demo FTT**

Requirements for the KC-135 demo; special considerations for testing large multi-engine airplanes.

### **FQ 926 Glider FQ Demo FTT**

Procedures and techniques for testing the flying qualities of an aircraft that is unable to maintain level flight.

### **FQ 928 C-12 First Flight Checkride FTT**

Procedures and techniques for first flight in a new or highly modified aircraft.

### **FQ 930 F-16 HQ Demo FTT**

Demonstration and practice of handling qualities test techniques.

### **FQ 932 F-15 CFP /Asym Stores Demo FTT**

Requirements for a captive compatibility flight profile (CFP) sortie IAW the mil handbook and demonstration of the degradation in flying qualities with an asymmetric store; comparison of F-15 asymmetric flying qualities with the basic F-15 aircraft; safety considerations.

### **FQ 934 AT-38 CFP Checkride FTT**

Requirements for successfully completing the final checkride; grading criteria.

### **FQ 938 F-16 Structures FTT**

FTTs for testing aircraft to structural load limits; procedures and techniques for the student test pilot practice while a student FTE/N controls the flight by monitoring simulated critical parameters via telemetry.

### **FQ 960 F-16 Limit Cycle Oscillation (LCO)**

Demonstrate and practice the FTTs used in flutter/limit cycle oscillation (LCO) testing; practice the procedures and techniques for effectively using telemetry.

### **FQ 961 F-16 LCO TM Room**

Practice real-time strip chart reading; CRM.

**FQ 962 ME FQ Demo**

Demonstrate and practice the FTTs for testing large multi-engine airplanes.

**FQ 966 Glider FQ Demo**

Demonstrate and practice procedures and techniques for testing the flying qualities of an aircraft that is unable to maintain level flight.

**FQ 968 C-12 First Flight Checkride**

Demonstrate and practice procedures and techniques for conducting the first flight of a new or highly modified airplane.

**FQ 969 C-12 First Flight Demo Chase/Target**

Perform target mission for checkride mission.

**FQ 970 F-16 HQ Demo**

Demonstrate and practice procedures and techniques for handling qualities testing.

**FQ 972 F-15 CFP / Asymmetric Stores Demo**

Demonstrate a captive compatibility flight profile (CFP) sortie IAW the mil standards and demonstrate the degradation in flying qualities with an asymmetric store.

**FQ 974 AT-38B FQ Checkride Practice**

Practice ability to organize, plan, brief, and fly/direct a test mission that assesses the overall flying qualities of an aircraft.

**FQ 975 T-38 FQ Checkride Practice Target**

Perform target mission for checkride practice mission.

**FQ 976 AT-38B FQ Checkride**

Demonstrate ability to organize, plan, brief, and fly/direct a test mission that assesses the overall flying qualities of an aircraft.

**FQ 977 T-38 FQ Checkride Target**

Perform target mission for checkride mission.

**FQ 978 F-16 Structural Loads**

Demonstrate and practice the FTTs for testing aircraft to structural load limits; practice the procedures and techniques for effectively using telemetry.

**FQ 979 F-16 Structural Loads TM Room Checkride**

Practice real-time strip chart reading; CRM.

**FQ 988 Debrief C-12 First Flight Checkride**

General Trends in class checkride performance.

**FQ 996 Debrief AT-38B FQ Checkride**

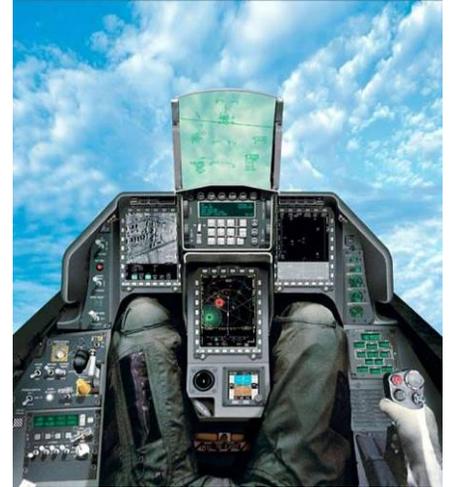
General Trends in class checkride performance.

**FQ 997 Debrief F-16 Structural Loads TM Room**

General Trends in class checkride performance.

## **SY 600 – Human Factors and Avionics – 3 Semester Credit Hours**

This group of courses consists of the Systems Phase Introduction, Human Factors, Integrated Navigation Systems, Communications and Data Link Systems, Avionics Systems Integrations (ASI), and Unmanned Aircraft Systems (UAS) lectures. These courses demonstrate different systems with in the cockpit and how their design is tested. The Flight Test Techniques for this group of courses consists of: Cockpit Evaluation FTT and F-15E Systems Demo FTT. The Lab Test Techniques in this group of courses consists of: Avionics Systems Integration Lab LTT and ASI IFAST Lab. Also within this group of courses is F-15E Systems Ground School.



### **SY 601 Systems Phase Introduction**

Introduction to the systems staff and their specific backgrounds and experience. Overview of different types of airborne systems with specific examples given. Introduction to the concept and importance of systems flight-testing. Overview of the systems phase gives the systems course roadmaps and details the systems curriculum including academics, flight test techniques, flights, and labs.

### **SY 602-603 Human Factors**

Human factors awareness in aircraft design and how to identify human factor problem areas; control and display design and evaluation; human error; workload; human factors test evaluation techniques; Cockpit Evaluation.

### **SY 604-607 Integrated Navigation Systems**

Principles of Inertial Navigation System (INS) including coordinate systems, Newton's Law of Motion, Accelerometer and Gyroscope Theory, and Kalman Filters; ring laser gyros and Fiber Optic Gyros (FOG); theory and application of radar navigation; INS Flight Test techniques and procedures; theoretical and practical foundation for understanding the Global Positioning System (GPS); use of GPS for determining navigational information such as user position and velocity relative to the local navigation frame of reference (latitude, longitude, altitude, and their time derivatives); history and motivation for GPS, basic properties of GPS, navigation solution theory, signal structure, code generation, code correlation, receiver design, ranging errors, geometrical errors, differential GPS, relative GPS, and carrier-phase GPS.

### **SY 608-609 Communications & Data Link Systems**

Overview of modern communications systems including UHF/VHF voice communications. Introduces test techniques such as the modified rhyme test. Introduces currently deployed USAF and NATO tactical data links.

### **SY 610-611 Avionics Systems Integration (ASI)**

Survey of the rationale and methodology for integrating avionics subsystems into a fully capable weapon system; physical and functional architecture considerations; MIL-STD-1553; the role of software and testing of integrated systems; case studies of actual avionics systems in selected aircraft.

### **SY 612 Unmanned Aircraft Systems (UAS)**

Definition of what a UAV is followed by numerous examples and a discussion of their history of development and application. Focus is on UAV systems and not on such areas as performance and flying qualities. Concepts and test techniques will be illustrated using such systems as Global Hawk, Predator, and Dark Star.

**SY 621 Anthropometric Measurements Lab**

Demonstrate the theory and techniques discussed in the Human Factors course; obtain individual measurements for self awareness during future human factors evaluations by the students.

**SY 622-623 Cockpit Evaluation FTT**

Techniques to qualitatively evaluate the crew station of an aircraft for its primary and secondary missions; techniques for oral and written reporting of results.

**SY 630-631 Avionics Systems Integration Lab LTT**

Requirements for Avionics Systems Integration Lab; techniques for evaluating software designs changes to include regression testing.

**SY 634-635 F-15E Systems Demo FTT**

Requirements for the F-15E air-to-air systems evaluation; techniques for evaluating system controls, displays, and cockpit interface for the Air Superiority mission.

**SY 635-636 F-15E Systems Ground School**

Introduction to F-15E systems in preparation for their F-15E demo flight. Topics include: Controls & Displays, HOTAS, RADAR Air-to-Ground submodes, Targeting Pod operations, UFC data entry, Terrain Following, and Auto Pilot functions.

**SY 670 Avionics Systems Integration (ASI) IFAST Lab**

Demonstrate the importance of software regression integration testing. Students are shown 3 different software releases/versions: a baseline, a “new tape with errors”, and finally the corrected tape version. With each version, students are expected to verify various functionality of the system.

**SY 674 F-15E Systems Eval Demo**

Evaluate the F-15E air-to-air and air-to-ground systems; practice techniques for evaluating system controls, displays, and cockpit interface for the ground attack mission.

**SY 678 United Airlines Simulator Evaluation**

Evaluate various airline simulators (e.g. B777, B747, A380) at the UAL facility in Denver, CO

**SYS 683 Cockpit Eval Expanded 5314 Report Authoring**

Document the results of the student’s cockpit evaluation.

**SY 698 United Airlines 5314 Report**

Document the results of the student’s simulator experience.

## **SY 700 – Airborne Sensors – 3 Semester Credit Hours**

This group of courses consists of the Electro-Optics Lecture and the Radar Lecture. These courses demonstrate different sensor systems used in modern day warfare. The Flight Test Techniques for this group of courses consists of: F-16C/D Electro-Optics FTT, F-16D (or VISTA) Air-to-Air Systems Evaluation FTT, the ASTARS FTT. The Lab Test Techniques in this group of courses consists of: the Electro-Optics Lab LTT, the IFAST Radar LTT, and the ASTARS Cockpit Training Lab. Also within this group of courses are the F-16C/D EO Systems Academics/Ground School and the ASTARS Ground School.



### **SY 701-704 Electro-Optics**

Theoretical background necessary to understand how ultraviolet, visible, and infrared electromagnetic energy is used in airborne military applications such as target detection, target acquisition, target tracking, reconnaissance, ground mapping, airfield damage assessment, navigation, communications, countermeasures/counter-countermeasures, and weapons delivery. Theory of electro-optical energy transfer from a ground or airborne target, through the atmosphere, to an airborne sensor. Unique materials and devices used in various types of EO system designs are discussed and compared. Several fundamental types of EO systems are presented and their specific applications are discussed to include TV, FLIR, Reconnaissance Systems, Helmet Mounted Displays, and Lasers. Measures of performance and figures of merit for various EO Systems are presented. The properties of targets and backgrounds in relation to EO System performance are discussed. Specific ground and flight test techniques that can be used to evaluate the performance of airborne EO systems. Two lectures are reserved for covering case studies and emerging EO technologies.

### **SY 705-708 Radar**

Modern radar theory and technologies; range & velocity ambiguities, RADAR range equation, RADAR scope types, pulse compression, Synthetic Aperture RADAR, Electronically Steered Arrays (ESA) and Active ESA (AESA) concepts. RADAR uses: A/G, A/A, Navigation, Targeting, Weather Avoidance, Ground Moving Target Indicator, Terrain Avoidance, etc..

### **SY 713 -714 F-16C/D EO Systems Academics / Ground School**

Prepares students for flight in modern F-16 block aircraft in order to execute F-16 Electro-optics demo.

### **SY 721-722 Electro-Optics Labs LTT**

Introduction to Electro-Optics Labs 1 and 2 events.

### **SY 725-726 IFAST Radar LTT**

Introduction to radar lab testing considerations. Overview of test buildup, test bench configuration, power measurements, Minimum Detection Signal (MDS) calculations, and instrumentation.

### **SY 729-730 VISTA Systems Ground School**

Survey of typical systems on a Block 40 F-16, which differ than the Block 10/15 F-16. Systems include UpFront controls, Multi-Function Displays, Larger Head Up Display, differences of the Hands On Throttle and Stick switchology and the Pratt & Whitney F100-PW229 engine. Systems unique to the VISTA F-16 are also introduced including the Helmet Mounted Display and the Voice Recognition System.

### **SY 731-732 F-16D (or VISTA) Air-to-Air Systems Eval FTT (P/N)**

Requirements for the VISTA air-to-air systems evaluation; techniques for evaluating system controls, displays, and cockpit interface for the Air Superiority mission. Review of typical testing path for avionics testing, discussion of various data products required and produced by various setups, introduction to military utility evaluations tailored to a specific mission and the build-up approach from ground testing, through functional evaluations, to integrated systems evaluations.

### **SY 732-732 F-16C/D Electro-Optics FTT**

Techniques for efficient execution of Electro-Optic orientation sortie on modern block F-16 aircraft equipped with a suitable electro-optic imaging/targeting pod.

### **SY 735-736 ASTARS FTT**

Preparation for flying the ASTARS missions. Students are shown how to apply their academic knowledge and theory of airborne systems to conduct specific FTTs to collect radar, infrared, electro-optical, and INS performance data during one daytime and one nighttime sortie on the ASTARS aircraft. Students are taught how to evaluate the human factors issues associated with pilot vehicle interfaces in conjunction with systems testing to make a limited operational assessment of the mission-suitability of the ASTARS for a specific mission. The ASTARS experience ties together all of the previous system flight test training the students have received.

### **SY 737-739 ASTARS Ground School**

Familiarization with the Navy NP-3D aircraft, the onboard sensors and systems, the HOTAS, how the sensors and systems are integrated, and the specific mission against which they are to evaluate the aircraft and systems for.

### **SY 739-740 ASTARS Cockpit Training Lab**

Provide students with a hands-on familiarization with the Navy NP-3D prior to their ASTARS flights. Students operate all sensors and systems exercising all modes using the HOTAS to include the fire control radar, sensor turret with TV and IR sensors.

### **SY 761 Electro-Optics Lab 1 (TPS)**

Provide students with an opportunity for hands-on practice and application of the academic theories and concepts learned during the electro-optics course. The lab is divided into three distinct areas of interest: IR Camera Demo and Evaluation, Laser Demo and Evaluation, Night Vision Goggle Demo and Evaluation

### **SY 762 Electro-Optics Lab 2 (IFAST)**

Provide the students with an opportunity to learn the fundamentals of ground testing airborne radar. The students are given the opportunity to explore radio signal characteristics in both the time and the frequency domain. The classroom lectures provides the student with the academic background needed to complete the laboratory. Test philosophy on how a radar progresses from initial contractor testing, to bench testing, to airborne test-bed testing, to air-to-air testing is explained. The philosophy of “graduating” from each stage of testing, and not glossing over major stages of testing because of schedule or money constraints, is explained. It is emphasized that “Fly-fix-fly” testing often results when avionics are rushed to flight test before ground testing can be successfully completed. The various types of radar ground testing are then explained. A brief RF review is then conducted, reviewing the major concepts needed to complete the lab. The lab is then discussed in detail in an FTT type manner, explaining what will be done and what is expected of the students.

### **SY 765 TPS Radar Lab**

Demonstrate the theory and techniques discussed in the classroom using a simple mapping radar in a controlled laboratory environment.

### **SY 763 F-16C Electro Optics Demo**

To actively apply knowledge gained by prerequisite course study in a modern 4th generation fighter aircraft equipped with an imaging electro-optic system (pod).

### **SY 766 IFAST Radar Lab**

Provide the students with an opportunity to learn the fundamentals of ground testing airborne radar. The students are given the opportunity to explore radio signal characteristics in both the time and the frequency domain. The classroom lectures provides the student with the academic background needed to complete the laboratory. Test philosophy on how a radar progresses from initial contractor testing, to bench testing, to airborne test-bed testing, to air-to-air testing is explained. The philosophy of “graduating” from each stage of testing, and not glossing over major stages of testing because of schedule or money constraints, is explained. It is emphasized that “Fly-fix-fly” testing often results when avionics are rushed to flight test before ground testing can be successfully completed. The various types of radar ground testing are then explained. A brief RF review is then conducted, reviewing the major concepts needed to complete the lab. The lab is then discussed in detail in an FTT type manner, explaining what will be done and what is expected of the students.

### **SY 771 F-16D (or VISTA) Air-to-Air Sys Eval Demo (P/N)**

Introduce students to Air-to-Air avionics testing, demonstrate the different setups and typical data acquired from each; introduction to providing military utility evaluations; Helmet Mounted Display introduction

### **SY 772 T-38 or F-16 Air-to-Air Sys Eval Demo Target**

Introduce students to Air-to-Air avionics testing, demonstrate the different setups and typical data acquired from each; introduction to providing military utility evaluations.

### **SY 775 ASTARS (day/night)**

Apply knowledge of avionics sensors and system theory and associated FTTs to gather radar, infrared, electro-optical, and INS performance data; students evaluate human factors integration issues of the pilot-vehicle interfaces in conjunction with avionics systems testing using human factors theory and guidelines. Students learn to make a limited operational assessment of the mission suitability of ASTARS for a specific mission. Specific FTTs include radar blip scans to determine probability of detection, radar ground map qualitative performance, radar ground moving target track performance, INS accuracy over a low level course, TV ground resolved distance, TV angular resolution, TV detection, recognition and identification of tactical targets, TV edge target response, IR minimum resolvable temperature difference, IR detection, recognition, and identification of tactical targets, IR edge target response, and ground map radar resolution in normal, expand, DBS1, and DBS2 modes.

### **SY 783 F-16C Electro-Optics Expanded 5314 Report**

Document the results of the student’s VISTA Electro-Optics Demo flight.

### **SY 789 ASTARS Expanded 5314 Report**

Document the results, conclusions, and recommendations from their ASTARS missions.

**SY 800 – Weapons and Integrated Systems Evaluations –  
3 Semester Credit Hours**



This group of courses consists of the Electronic Warfare Lecture, the Weapons Delivery Testing Lecture, the F-16C/D Air-to-Ground Lecture, the Smart Weapons Air-to-Air Lecture, the Smart Weapons Air-to-Ground Lecture, and the Weapons and Tactics Overview Lecture. These courses demonstrate different weapons systems and the test of their delivery for modern warfare. The Flight Test Techniques for this group of courses consists of: EC

Testing LTT/FTT, F-16 Weapons Delivery Familiarization FTT, T-38C Systems Evaluations Checkride FTT. Also within this group of courses is T-38C Systems Evaluation Ground School.

**SY 801-805 Electronic Warfare**

The theoretical background and concepts necessary to understand the technologies that deny an adversary the use of the radar, optical, and infrared portions of the electromagnetic spectrum. Conversely, the material presented also describes the exploitation of these same spectrums to achieve a tactical advantage and increase the survivability of US military platforms in a hostile environment. Test methods are also presented. A Radar Warning Receiver/IFAST ECM SIL tour and case studies of actual countermeasure testing reinforces concepts presented in class. Directed energy weapons are also covered.

**SY 807-808 Weapons Delivery Testing**

Introduction to various aspects of weapons testing including weapon delivery systems integration with RADAR, HUD, INS, and Electro-Optic systems. Other topics include error budgets, instrumentation considerations, test range capabilities and coordination, and CEP calculations.

**SY 809-810 F-16 Weapons Delivery (P/N)**

Discussion of F-16 specific avionics and delivery modes used to deliver Air-to-Ground weapons including Fire Control Computer, Inertial Navigation System, Head Up Display, Hands On Throttle And Stick Switches, Fire Control Radar, Radar Altimeter; Specific switchology is discussed relating to systems updates (INS position and altitude updates), and most delivery modes—Constantly Computed Impact Point, Constantly Computed Release Point, Dive-Toss, Loft and Manual.; Aircraft and weapon/weapon dispenser preflight and discussion of abnormal procedures.

**SY 811-812 F-16C/D Air-to-Ground (FTE Only)**

Familiarization for FTEs with no or limited air-to-ground weapons delivery background with the basic piloting techniques and workload required during computed bombing, to provide an introduction to the integrated systems and computations required for computed weapon delivery. Students are introduced to F-16C/D weapons displays, modes, and procedures. Delivery modes include: Manual, CCIP, DTOS, CCRP, LOFT, and STRAFE. Instruction includes Up Front Control (UFC) and Stores Management System (SMS) operation and data entry. Hands-on-Throttle-and-Stick (HOTAS) familiarization is also covered.

**SY 813-814 Smart Weapons A/A**

Covers a wide array of weapon systems academics, test programs, and lessons learned. Weapons discussed include, but are not limited to, AMRAAM, AIM-9X, and Airborne Laser.

### **SY 815-816 Smart Weapons A/G**

Covers a wide array of weapon systems academics, test programs, and lessons learned. Weapons discussed include, but are not limited to, WCMD, JDAM, JSOW, JASSM

### **SY 821-822 EC Testing LTT / FTT**

Introduction to ECM lab testing (Electronic Combat Ground Test Lab) and flight-testing (Electronic Combat Flight Test Lab / ALQ vs. IFAST flight). Preflight logistical considerations are discussed. The main thrust of this hour is to describe the ALQ-167 or ALQ-188 ECM pod control & operation, mission control functions from the IFAST building, and the flight cards for target maneuvers.

### **SY 829-830 F-16 Weapons Delivery Fam FTT (P/N)**

Description of mission profile to drop BDU-33s; discussion of range layout and event order; description of various Inertial Navigation System updates; description of flight test weapon delivery techniques; discussion of radar interpretation and pacing for computed and manual deliveries; abnormal procedures

### **SY 831-832 F-16C/D Weapons Delivery LTT (FTE Only)**

Preparation for F-16C/D Weapons Delivery Simulator. Students are briefed on weapon deliveries for their mission: STRAFE, Manual, DTOS, CCIP, Delayed CCIP, CCRP, and LOFT. Students are expected to prepare mission cards which include SMS inventory loading, INS waypoints, LOFT angles, and pipper depression angles.

### **SY 835-836 T-38C Systems Eval Checkride FTT (P/N)**

Requirements for the integrated systems evaluation; techniques for evaluating system controls, displays, and cockpit interface for a defined mission. Emphasis is on planning a sortie which will exercise an integrated system in an operationally representative environment within realistic limitations; discussion regarding presentation of results from such evaluations.

### **SY 837-838 T-38C Systems Eval Ground School (P/N)**

Preparation for their T-38C Integrated Systems Evaluation. Explanation of the functionality of the T-38C avionics suite. Emphasis is on the typical operational use of each system and common mistakes using the system(s).

### **SY 861 Electronic Combat Ground Test Lab (US Only)**

Expose students to laboratory ECM testing. Students observe effects of various ECM techniques against an actual host RADAR [US Only] or simulated radar [all].

### **SY 862 Electronic Combat Flight Test Lab (US Only)**

Expose students to flight ECM testing. Students observe effects of various ECM techniques against a host RADAR. The effects of “burn-through” and target maneuvers are also explored. Students direct the mission against a T-38B with an ECM pod (ALQ v. IFAST flight) from the laboratory, operated radar controls, and note effects.

### **SY 863 AT-38B ALQ-167/188 ECM vs. IFAST**

Introduce the student to in-flight ECM testing. During this flight students will fly precise tracks against the IFAST with an ALQ-167 or ALQ-188 ECM jamming pod (or equivalent). They will operate the pod controls as directed by control team at the IFAST (Electronic Combat Flight Test Lab).

**SY 869 F-16 Weapons Delivery Familiarization (P/N)**

Familiarize pilots and FTNs with the basic piloting techniques and workload requirements during manual and computed bombing on a conventional range; evaluate the F-16B in the manual and computed weapons delivery mission; requirements and techniques for ground controlled weapons delivery; emphasis on flight test weapon deliveries.

**SY 871 F-16C/D Weapons Delivery IFAST Lab (FTE)**

Preparation for student flight test engineers to fly a one-hour weapons delivery sortie in the IFAST F-16 simulator. Students are briefed on a standardized profile that was developed for their use. Emphasis is placed not on how well the students can fly the various deliveries, but rather on observing and learning the differences in workload and tactics between doing manual weapons deliveries vs. computer aided deliveries. Students will accomplish low altitude strafe, manual, CCIP, DTOS, CCRP, and angle off pop-up attacks. Students are required to observe and comment on the Human Factors issues associated with the Block 40 F-16 Pilot-Vehicle Interface (PVI) for each type of delivery. Students are required to brief and debrief the mission explaining what they observed to the instructor.

**SY 872 F-16D Systems Eval #1 (Luke AFB) Flight**

Evaluate the F-16D during a fighter training operationally representative scenario (e.g., BFM, ACM, ACT, SAT (SWD or AWD), CAS, FAC)

**SY 873 F-16D Systems Eval #2 (Luke AFB) Flight**

Evaluate the F-16D during a fighter training operationally representative scenario (e.g., BFM, ACM, ACT, SAT (SWD or AWD), CAS, FAC)

**SY 874 F-16D Systems Eval #3 (Luke AFB) Flight**

Evaluate the F-16D during a fighter training operationally representative scenario (e.g., BFM, ACM, ACT, SAT (SWD or AWD), CAS, FAC)

**SY 875 T-38C Systems Evaluation Checkride**

Evaluate the student test pilot/navigator's knowledge of systems flight test techniques; evaluation of avionics/sensor integration while confirming functionality.

**SY 876 T-38 Systems Evaluation Checkride Target**

Perform target mission for checkride mission, if required.

**SY 889 F-16 Weapons Delivery Fam Expanded 5314 Report**

Document the results of the student's F-16 Weapons Delivery Fam flight.

**SY 895 T-38C Systems Evaluation Checkride PRR**

Evaluate the student test pilot/navigator's knowledge of systems flight test techniques; evaluation of avionics/sensor integration while confirming functionality.

**TM 600 – Test Planning and Reporting – 4 Semester Credit Hours**

This group of courses consists of the Test Management Phase Introduction, Probability and Statistics (P&S), Test Conduct, Intermediate T&E, the Test Management Course, Unit Safety Officer (UTSO) Training, TMC Mod Planning, Design of Experiments (DOE), All Weather Testing, Deficiency Reports, and Executive T&E. These courses demonstrate the proper planning and execution for flight test. Also within this group of courses are the TPS Reports Program, Initial Flight Reports, and Technical Report Formatting, and the DOE Project.



**TM 601 Test Management Phase Introduction**

Overview of the Test Management Phase; requirements for phase completion.

**TM 604-607 Probability & Statistics (P&S)**

Methods needed to analyze flight test data for statistical and practical significance; review of probability and statistical concepts; confidence intervals and hypothesis testing; determination of sample size and error analysis.

**TM 608-609 Test Conduct**

Procedures and techniques for directing a test mission; methods of communication and crew coordination; safety considerations.

**TM 610-611 Test Instrumentation**

Description of the elements of flight test instrumentation systems.

**TM 612-615 Intermediate T&E**

Survey course that covers various topics in test and evaluation including logistics testing, alternate test and evaluation programs, operational test and evaluation, test and evaluation master plans and requirements analysis. Used in conjunction with the rest of the TPS curriculum to provide TST 202 equivalency.

**TM 616-617 Test Management Course**

Elements of the test planning and execution process. Includes AFFTC capabilities, provisioning, resourcing, and budgeting.

**TM 618-619 Unit Test Safety Officer (UTSO) Training**

The Air Force Flight Test Center safety process. Qualifies students as AFFTC Unit Test Safety Officers.

**TM 620-621 TMC Mod Planning**

The Class II modification process.

**TM 622-623 Design of Experiments (DOE)**

Overview of how to design flight test experiments and determine number of tests required to meet the objectives.

### **TM 624-625 DOE Project**

Give students practical experience at solving DOE problems using statistical software. A 1 hour review session follows the completion of the lab project to gauge student comprehension and application of the software tools.

### **TM 626-627 All Weather Testing**

Fundamentals of testing aircraft in different climates; history and reasons for testing aircraft in hostile weather environments; problems and solutions associated with the testing of various avionics, fuel, and armaments employed in modern aircraft in all weather extremes including those generated in the U.S. Air Force's Climatic Laboratory.

### **TM 628-629 Deficiency Reports**

Why the Air Force uses service reports to document deficiencies discovered during flight test and how to write the reports; explanation of the system for tracking the reports and corrective actions; practical aspects of accomplishing Deficiency Reports and how the Deficiency Report System functions within a test program.

### **TM 630-634 Executive T&E**

Used in conjunction with the rest of the TPS curriculum to provide TST 301 equivalency.

### **TM 681-682 TPS Reports Program**

Overview of all the reports the students are required to complete; explanation of the basic report elements and the reports process.

### **TM 683-684 Initial Flight Reports (Form 5314)**

Process for writing initial reports and flight reports; elements of a report and the types of data that are important for documenting in-flight observations; use of Form 5314.

### **TM 685 Technical Report Formats**

How to format the various types of reports used at TPS and AFFTC.



**TM 900 – Test Management Project and Comprehensive Exams – 9 Semester Credit Hours**



**Sponsored Research – Test Management Projects**

The Test Management Projects or TMPs are customer funded flight test projects which are performed by the USAF TPS students with guidance from the TPS staff. The students are broken up into Test Teams of pilots, navigators, and engineers with approximately 4-6 individuals to a team. TMPs are designated for approximately 10-15 fighter aircraft test hours or 20-25 heavy aircraft test hours. 8 TMPs occur per year at USAF TPS (4 in the Spring and 4 in the Fall). The customer provides the research concept or part that is to be flight tested. Also any money for specialized support of major aircraft modifications is supplied from the customer. USAF TPS provides the test aircraft, which are normally AFFTC assets. The Test Pilot School also funds “minor” aircraft modifications and the cost for flight hours of test and evaluation. The TPS students take the flight test data, reduce the data, conduct data analysis, and provide a DTIC-ready technical report for the customer at the end of the process.

**TM 901-902 Comprehensive Written Test**

The Comprehensive Written Test is a four hour exam. It is a closed notes/text exam (equation sheets are provided). Each subdivision is allocated an hour of the exam, in which the Master Instructors can ask any and all related material the students have seen over their time at USAF TPS.

**TM 903-904 Comprehensive Oral Test**

The Written Oral Test is a panel examination of the individual students to ensure their comprehension of test principles and concepts. A panel of 2 or 3 USAF TPS faculty presents the student with a possible test scenario. The student must then develop a test concept and defend it to the panel in order to pass.

**TM 941 Test Concept Letter**

Document test team’s Test Concept for TMP.

**TM 942 TMP Resources Workshop**

Workshop to assist student TMPs in their resource planning, particularly budgeting.

**TM 943 TMP Test Concept Meeting**

Give students practical experience at evaluating the technical requirements of a flight test program. Mirrors an actual Air Force Flight Test Center technical review.

**TM 944-945 TMP Test Plan Working Group (TPWG)**

Give outside experts review the student’s draft plan and provide feedback. Mirrors an actual Air Force Flight Test Center test plan working group.

**TM 946 TMP Test Plan, Draft 1**

Document plan for test team’s Test Management Project.

**TM 947 TMP Test Plan, Draft 2**

Document plan for test team’s Test Management Project.

**TM 948 TMP Test Plan, Final**

Document plan for test team's Test Management Project.

**TM 949-950 TMP Tech/Safety Review (TRB/SRB)**

Give students practical experience at evaluating the technical requirements of a flight test program. Mirrors an actual Flight Test Center technical review. Give students practical experience at evaluating the risks of a flight test program. Mirrors an actual Air Force Flight Test Center safety review.

**TM 971 TMP Data Flight 1**

Collect data for TMP.

**TM 972 TMP Data Flight 2**

Collect data for TMP.

**TM 973 TMP Data Flight 3**

Collect data for TMP.

**TM 974 TMP Data Flight 4**

Collect data for TMP.

**TM 981 TMP PAR #1 (Observe)**

Junior Class observes Senior Class briefing.

**TM 982 TMP PAR #2 (Observe)**

Junior Class observes Senior Class briefing.

**TM 983 TMP Oral Report (Observe)**

Junior Class observes Senior Class briefing.

**TM 984-985 TMP PAR #1 (Present)**

Provide students with experience at presenting interim oral reports to other test teams. Mirrors the PARs given by test teams at the Air Force Flight Test Center.

**TM 986-987 TMP PAR #2 (Present)**

Provide students with experience at presenting interim oral reports to other test teams. Mirrors the PARs given by test teams at the Air Force Flight Test Center.

**TM 988 TMP Pre-Writers Meeting**

Plan for draft TMP Report.

**TM 989 Technical Information Memorandum, Draft 1**

Document TMP.

**TM 990 Technical Information Memorandum, Draft 2**

Document TMP.

**TM 991 TMP Report Coordination Mtg (Murder Boards)**

Review of draft TMP Report. (Murder Board)

## TM 992-993 TMP Oral Report

Document the results of the student test management project; final demonstration of oral reporting skills. Mirrors the oral presentations test teams provide to higher headquarters.



**OE 900 – Single-Look Qualitative Evaluation Program – 3 Semester Credit Hours**

As future tester for the USAF, TPS students must graduate with a broad range of knowledge of flying and testing aircraft. Therefore, throughout the 48 weeks of the course, several different types of aircraft are brought to the school for the students to fly and test. The basic list of these aircraft follows:

T-1A Jayhawk	T-6A Texan II	T-37B Tweet	B-17 Flying Fortress
T-38C Talon	T-43A (B737) Nav Trainer	HU-16 Albatross	MiG-15 Fagot
F-4G Phantom II	L-39 Albatros	Good Year Blimp	DC-3

These aircraft are just the baseline of aircraft that are brought to TPS. Each class sees approximately 30 total aircraft types in their time at TPS throughout all of the courses. The qualitative evaluation aircraft come to the school on a rotating basis, making QE 900 a slightly varying and a unique experience for each graduating class.

Additionally, a 2-week “field trip” makes up part of this course. The students will visit Eglin AFB to perform qualitative evaluations on the F-15D Eagle, F-15E Strike Eagle, F-16DJ Block 50/52 Fighting Falcon, UH-1 Huey, T-34 Turbomotor (from Whiting Field), and other aircraft not available at Edwards AFB. They will also visit the U.S. Naval Test Pilot School at Patuxent River, MD where they will perform qualitative evaluations on the SH-60 Seahawk, F/A-18 Hornet, and other naval aircraft. Finally, they will visit a foreign test center to perform qualitative evaluations on their available aircraft. Typical foreign test centers that have been visited in the past include Empire TPS (Boscombe Down, U.K.), EPNER (France), Italy, Brazil, India, Germany, Spain, and Sweden. Additionally, the student test pilots will visit Davis-Monthan AFB to perform qualitative evaluations on the A-10, while student FTEs will visit Luke AFB to perform qualitative evaluations on the F-16DG in operationally representative training missions.



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*AFI 99-107*

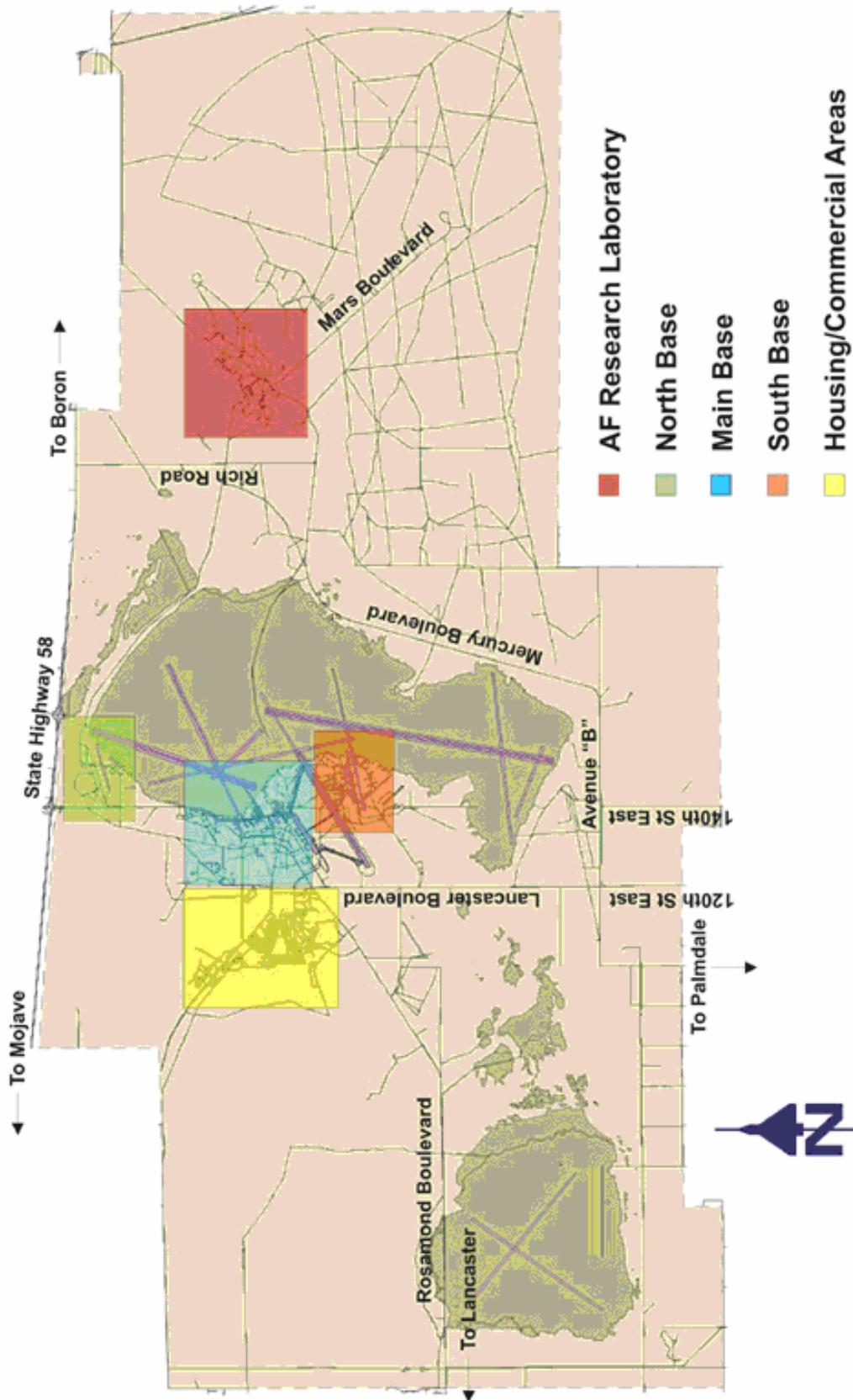
### USAF TPS Commandant's Policy Letters

<i>Alcohol in the Work Place Policy</i>	<i>22 Nov 2005</i>
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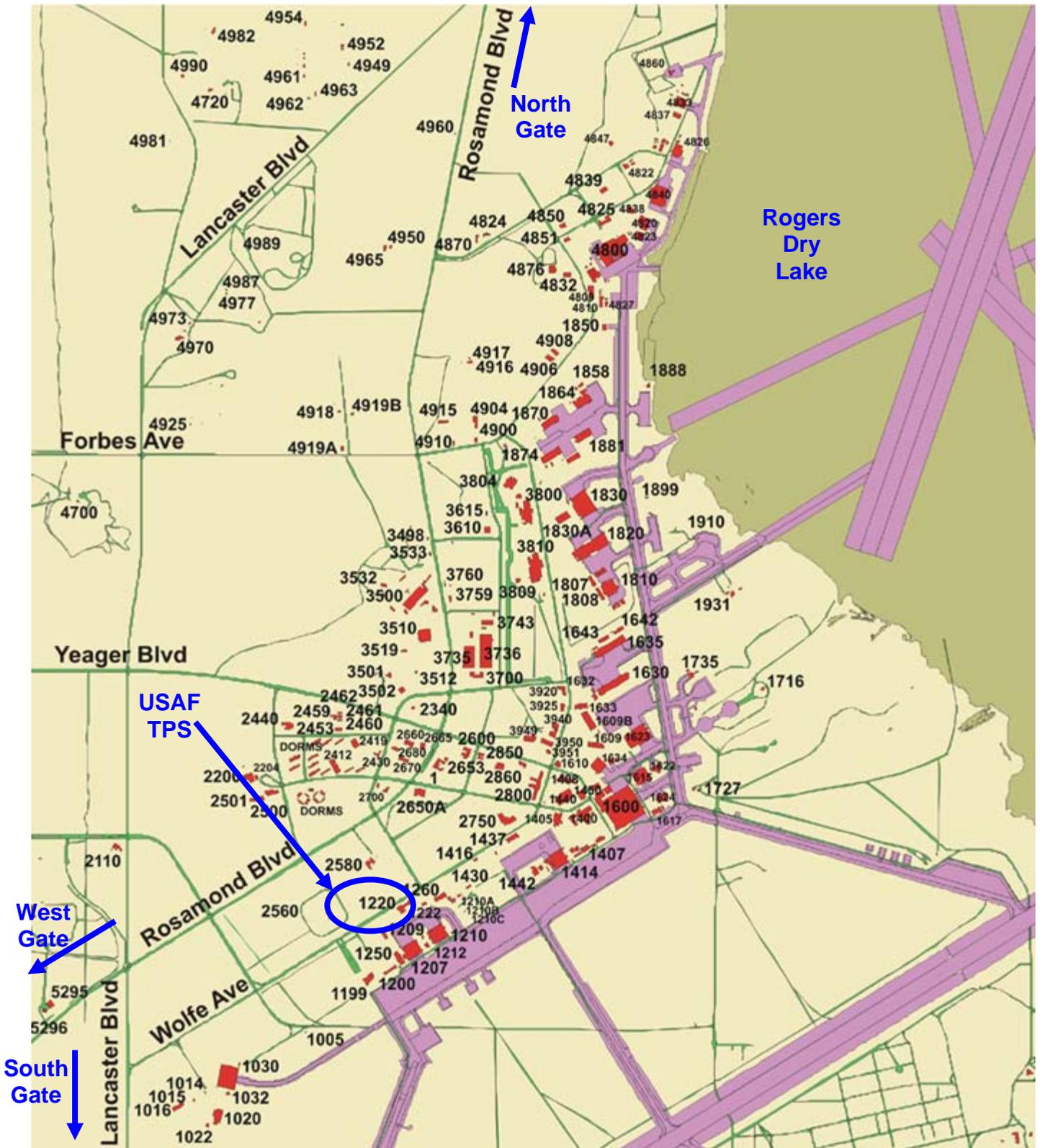
## Acronym List

A/A	Air-to-Air
A/G	Air-to-Ground
ACE	American Council on Education
AFFTC	Air Force Flight Test Center
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AN	Ancillary Training
APDP	Acquisition Professional Development Program
ASE	Aero-Servo-Elastic
ASTARS	Airborne Systems Test and Research Support Airplane
CF	Check Flight Phase
COOL	Center Operations On-Line
CRM	Crew Resource Management
CTS	Course Training Standards
EO/IR	Electro-Optics/Infrared
EP	Evaluation Pilot or Emergency Procedures
ETP	Experimental Test Pilot
EW	Electronic Warfare
FCIF	Flight Crew Information File
FCS	Flight Control System
FQ	Flying Qualities Subdiscipline/Phase
FTE	Flight Test Engineer
FTN	Flight Test Navigator
FTT	Flight Test Technique
GPS/INS	Global Positioning System/Inertial Navigation System
HQ	Headquarters or Handling Qualities
IFAST	Integration Facility for Avionics System Testing
IFTN/E	Instructor FTN/FTE
IMA	Individual Mobilization Augmentee
IP	Instructor Pilot
L/D	Lift over Drag Ratio
LTT	Laboratory Test Technique
ME	Multi-Engine
NACIQI	National Advisory Committee on Institutional Quality and Integrity
OI	Operating Instruction
OPSEC	Operations Security
ORM	Operational Resource Management
PF	Performance Subdiscipline/Phase
QE	Qualification Evaluations
SETP	Society of Experimental Test Pilots
SFTE	Society of Flight Test Engineers
SY	Systems Subdiscipline/Phase
TM	Test Management Subdiscipline/Phase or Telemetry
TMP	Test Management Project
UAL	United Airlines
UAS	Unmanned Aircraft System
VISTA	Variable-stability In-flight Simulator Test Aircraft
VSS	Variable Stability System

# Edwards AFB – Local Area Map



# Edwards AFB - Main Base Map





# United States Air Force Test Pilot School

